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JOURNAL *of* FARM ECONOMICS

VOL. XII

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POLICY AND PROGRAM OF THE FEDERAL FARM BOARD

ALEXANDER LEGGE

This perhaps represents a maximum nerve on the part of one trying to speak to a group of people, each and every one of whom knows more about the subject than the speaker. I think most of you will admit it. If you do not now, you will in a few moments after I get through talking to you.

Talking is not in my line and that is perhaps unnecessary to remark, as you will also find that out in a moment. What you are interested in, I take it, is to hear something of the problem and more particularly the progress that the Federal Farm Board is making or at least hopes it is making in connection with the task assigned to it. The topic assigned to me is "The Policies and Program of the Federal Farm Board," both of which, I think were fairly and clearly set out in the law itself. While wide discretionary power is given to the Board in carrying out policies, the charter was pretty fairly written and clearly defined in the act—the attack of the problem to be along the line of cooperative, collective action on the part of the agricultural producers of the country. That term "cooperative" is written in almost every paragraph of the bill. Clearly, it indicates that the intention was that the problem should be approached in that way and that has been the line of approach on which the Board is working. You people would be foolish to spend any time in listening to me talking to you about what that problem is. You have

Stenographic transcript of address before the 20th annual meeting of the American Farm Economic Association at Washington, D.C., December 27, 1929.

been thinking about it a lot and studying it for these many years. It is not new.

Some of you no doubt have gone through the ancient history of the efforts of the Chinese Government to do something of this kind, which the Chinese continued for a period of something over a thousand years, and finally abandoned. Whether doing so has any connection with the frequent famines that they have been having recently, I cannot tell. That is something which you people can work out for yourselves. Anyhow, their situation, since abandoning the effort, is not any happier than it was before. I think that is rather conclusive.

Going back for a second, to the underlying problem, as some of us see it or think we see it, is this disparity. Perhaps it has always existed in most or many of the countries. Obviously, those countries that produce less food than they consume have the problem in a less degree because of more cost of transportation, importing, distributing food stuffs from some other land, as to the level of prices, within that country, and make the relative position of the agricultural producer better in relation to other industries than exists in those countries that have constantly and continually had an exportable surplus, although this does not tell all the story. One of the problems we are working with, at the present time, is wool, and as you all know, we do not produce anywhere near as much in this country, as we consume and yet the wool grower feels that he has a problem quite as much as the cotton grower or the wheat grower or any of the rest of them.

This situation apparently has become more acute during recent years; perhaps not so much so as we generally think. In the earlier days, in the settlement of this country, the farmer might go on without an operating profit on his balance sheet, such as an industry or a railroad would make out. I am afraid that is true of too many years of past operation. But, as long as he was operating on land, homestead or property that he acquired, at a very low cost, and with the advancement of the country, and values continuing to increase, while not making an operating profit, he was still making progress. Then, came the great War, the inflation or rapid

enhancement of prices, establishing price levels which most of us farmers had never dreamed of, not in my generation at least, followed by a rather sudden collapse. After the show was over, and since that time, the tendency of these land values has been not upward, but downward. That, perhaps, is what has made the situation so much more acute and he is no longer able to obtain an indirect earning, but on the contrary, is dependent, wholly, on whether there is an operating profit to him in what he produces from year to year. And, this disparity, therefore, is increasing, more in this country than in some others, because of the rapid (what shall we call it) consolidation, building of large units in most every form of industrial life other than agriculture.

Thirty years ago, I heard a lot of you economists predict, and prove conclusively, that those large units could not be economical, and that they would not work, that they would become top-heavy and destroy themselves, but somehow as a rule, they have not done that; somebody has gone ahead, just the same, and made them successful. We hear today the argument that the chain store system is fundamentally wrong, but it seems to be growing and growing rapidly. Through all of those organized efforts, we have the one constant, underlying basis of collective, concerted action, not the action of the individual, not the question of any one mind applied to any one problem, but rather the mature judgment of a large group of trained men, whose job is to determine the policy or program under which the big corporations operate. And there cannot any longer be much doubt that collective thinking on the part of the management of such organizations has been beneficial to them; they have progressed. As a result, the disparity in the earnings of agriculture and the workers in some other industry, has grown wider.

We will start anywhere along the line. Somebody raises the rent because his taxes have gone up, and that rent is taken up in the balance sheet of the fellow who pays the rent, and that, in turn, is passed along to the people with whom he is doing business, and usually it is passed along on an accumulative basis. Everybody tries to figure his cost of operations and some percentage over and above that cost,

so that every time something is added, in any stage of the process, a profit is included and the whole is passed along to the next fellow. Finally it reaches a class of people who cannot pass it on. The agricultural element is the largest in that class. The farmer hasn't any place to pass it along because, under the system that has grown up in the handling of his produce, he has very little to say about what his price is going to be—whether it covers cost of production or anything else. He brings his stuff to town and takes what he can get for it.

Some progress has been made along that line. I think, perhaps, the best illustration is that of the California Citrus Fruit Growers. One reason is they have been at it longer than anybody else, in a cooperative way. It has been twenty-six years, I believe, since the present organization was set up. I speak feelingly on that subject, because at one time I owned some citrus groves and I know exactly how the thing worked. I have first-hand, intimate information on the subject. There was always a question, when you shipped a carload of fruit from the Pacific Coast, whether you were going to get a draft in payment for the fruit, or have one drawn on you in payment for the freight. There was a draft involved in each case, but it was sometimes going and sometimes coming. The shipments were indiscriminately made on certain markets. No shipper knew where he was sending his fruit that particular day, and the result was that it piled up rapidly on some central market, where there might have been a reasonable opportunity of disposing of it somewhere else, but this was all haphazard, following the natural growth of individual profits on an individual basis.

From that we have come to this—that the organization, as a whole, knows the consuming power, the normal consumption of every important market. The California Citrus Growers have had that record for years. They know what the city of Washington normally consumes of those commodities, not only each year, but every day in each year. They try to regulate, and do, to a very measurable extent, regulate the supply that flows from producers to consumers in relation to what consumers are in the habit of using: all of which, results, occasionally, in the thing backing up as a surplus and

so they go at it to find a way to dispose of that surplus, and they have been fairly successful in doing that. It is true, that the surplus is used in various by-products. Probably in by-products at 20 to 25 per cent of the price it would have brought, had there been a market for it as a fruit. Not only do they salvage that 20 to 25 per cent but they avoid paying the freight on it across a great big continent, so that the saving is far greater to them. They also avoid destroying the price of that percentage of the crop for which there is a legitimate, normal outlet on a live-and-let-live basis. That can only be done through concerted collective action. Otherwise, one shipper would get full price for his carload of stuff and the other fellow would take the by-product price, but that is not the way it works in collective action. At the close of the season, the whole thing is figured up and prorated, and it does not make any difference to the producer, whether his particular fruit went to the by-product plant or to the New York market, the average return is what he gets. And from a condition which was deplorable, the California Citrus Fruit Growers for several years past have been on a fairly comfortable and happy basis. They are not making any extravagant profits, but they are making a living, and paying their taxes—a pretty good living, as farmers generally would regard it.

Something along that line for other growers is what we are seeking to do. I am telling you that story to give you an illustration. Unfortunately a lot of cooperative efforts of the past have been rather haphazard. It is not a breach of confidence to say that today our progress is handicapped because of differences of opinion, little petty jealousies, as to what is the right way to do it (and I don't profess to know what is the right way to do it), but it is not going to be done in any other way, except through some concerted, collective action. That is the foundation of the cooperative effort. When you get cooperatives to where they are working in a common cause, we may hope to make progress.

You probably have seen quite a little recently in the press as to objections or opposition on the part of old line traders in certain commodities. Those are not disturbing. The real question as to how far this work may go, and how successful

it is going to be, is not based on what opposition we get from the outside. The great question is, how far will the producers really get together and act, and collectively hold together, so that they may get the benefit to be obtained through cooperative processing or marketing of grain or other farm products, whatever they are. That does not mean any reflection on the individual buyer. We hear an awful lot about how some of the people are able to handle cotton, for a few cents a bale, or what a very small fraction the operating cost is on a bushel of wheat. That is not the question. That is not the story at all. The individual trader can only take those commodities as they are offered to him and do the best he can with them. But collectively the producer can so regulate the flow of his commodity to market as not to destroy the market and possibly obtain whatever in the last analysis the commodity actually is worth.

And following that conclusion a little further, the other great difference between agriculture and industry is the fact that industry must, in order to live, regulate from day to day the flow of its product to what the consuming demand may be, what its possibilities are. It is true that through advertising and through many development programs in certain cases consumption can be increased, but even so it reaches a maximum. It is a very common story to hear the farmer talk about the comparison of the steel corporation and the results of agriculture, but where the steel corporation (as the situation is today) finds that the market will not absorb what it is producing, down goes a blast furnace. They are running about 65 per cent capacity today while three months ago it was 94 per cent. The product is adjusted to whatever level or basis they find it possible to market,—while in agriculture each fellow, 6,000,000 of them, goes all by himself regardless of what the consuming demand may be, usually in ignorance of what it is, and he goes on producing and wonders why he cannot get a better return for his effort.

Here is a point which you may be interested in as to the progress of the Board: You will notice that we are trying to centralize the scattered efforts that have heretofore been going on along cooperative lines. Farmers got together out in Kansas; a hundred of them clubbed together and built an elevator to handle their own grain, but they stopped there.

Now, it happened that they could save a fraction of a cent a bushel over what some private operator was charging them, but that didn't mean enough to them. It didn't mean enough to make the movement a success. That elevator competed with every other one; that cooperative competed with every other cooperative in the same manner that the private traders have always competed. Cooperation on that basis does not mean anything or any possible progress in solving the problem. Farmers should follow that local cooperative effort through. Follow it where, you will ask me. Somewhere to a processing point. I do not think any farmer in this country wants to go into the milling business to mill his own grain, but he probably will follow that grain until it reaches the processor. I do not think, as a rule, there is any demand for them to run packing houses and distribute their own meat, but they may be able to so regulate the supply and carry it to the packing house that it will always bring them a fair price.

You will find the argument for the curtailment of production very unpopular with the farmer as a rule. But it is reasonable to suppose that in time he may grasp the simple problem that if he can get more money for four bushels of wheat than he can get for five bushels, perhaps he will raise four bushels of wheat instead of five. That is a typical illustration of where we stand today. A 20 per cent reduction on an average of what the farmer produces would make the tariff on grain effective, and give him a higher level of prices. I think it is conservative to say that 20 per cent less production would bring him 20 per cent more money than he is now getting for what he produces.

I can go on indefinitely, but that is not what you people are interested in. I notice in your program here that you have made provision for questions and discussion, so, it is open season, gentlemen. That is what you are really interested in, not in any stories that I am going to tell you, but in answering some questions that you may have in mind. Shoot.

DISCUSSION

Dr. John D. Black: I would like to have Mr. Legge tell us a little more specifically than he has done about this national

organization, and its duties, what it proposes to do when set up, what are the specific steps or processes they expect to take?

Mr. Legge: Well, I was speaking about grain a moment ago, and that is probably a good illustration. The central grain corporation is made up of a vast number of local co-operative organizations, for the most part they come to the central, in groups by states or districts. The grain trade divides itself into different classifications—the Pacific Northwest, raising a rather different kind of grain and most of it goes to the Pacific ports; the spring wheat territory in the northwest goes out in a different direction. In between, there is a lot of no-man's land where they don't know when they harvest the wheat whether it is more profitable to ship it west or to ship it east, and sometimes they actually ship it south.

This central grain corporation, owned and controlled by the producers themselves, started out to make a survey or study of the facilities. The movement of that particular crop has changed in my lifetime. When I was a boy we used to stack the grain and never thought about thrashing it until freezing weather set in. As a result, it moved on to the market over a long period of months. From that they went to "shock thrashing" and then to the combine and today the whole business moves at once and the storage facilities on that basis are not adequate. Some additional provision must be made either to store it on the farm or at terminals some place. We had a situation three months ago where cash grain was selling at a discount of 15 or 20 cents a bushel below its value based on the future contract, simply because there was no place to put it. The port of Galveston had 9,000 cars loaded which stayed there for months. The railroad people explained that their demurrage rates, which were fixed by the Interstate Commerce Commission, were so low that it was nearly as cheap for a grain dealer to hold it in the cars as anywhere else. Consequently, they filled up the yard so the railroads had great difficulty in operating. In some sections of the country all their trackage was full of loaded wheat cars paying demurrage because there was no elevator to put it in. That is one of the problems of the cen-

tral cooperative. It is going to assist in financing some additional facilities. It will control, under one sales management, a sufficient percentage of the commodity to have some measureable influence on making the market, which under the old system never did and never could exist. Under the program we are working on we hope and believe it will exist. Now, you can get into a lot of economic situations such as what percentage you have to have in order to make that effective, but you have one outstanding illustration in the Canadian wheat pools which handle around 50 per cent of the product. It is absolutely running the market so far as the Canadian grain is concerned. Does that answer the question?

Dr. Black: Yes.

Mr. Legge: Thank you.

Mr. Jesness: With respect to the present loan policy which is in vogue on grain and also on cotton, you will find some questions arising in the grain district as to the sharing of the risk there between the Farm Board and the organization. In the case where you have established a loan that is sometimes higher than the then ruling market price, what is the risk?

Mr. Legge: Theoretically the risk is that of the cooperative; practically it is that of the Federal Farm Board,—the Government. In all cases we look to the strength of the cooperative, but we might as well face facts, if that price cannot and is not maintained, some of us close by are going to know where the loss is going to fall. There is no other place that it can fall. But, theoretically that risk is the risk of the cooperatives. They are supposed to have an amount sufficient to cover the carrying charges but I am not sure that all of them are doing that, even with grain selling at the loan price.

Dr. H. C. Taylor: Do I understand then, that the local elevator, to follow your illustration, could delegate full responsibility for the sale and movement of that grain to the national grain marketing company?

Mr. Legge: The local elevator does not really sell it. The local elevator consigns it to the central grain marketing company or sells it on order of the central. The control of

the sales rests wholly in the central organization, the central management. It may not mean that the grain actually moves to any central terminal, however, because, after all, 80 per cent of our grain, speaking of wheat, is milled right here in this country and very often the demand for it locally for milling purposes brings better prices than where the grain is shipped to a terminal, but it will be sold under the direction of the central office.

Mr. Miller: In the case of grain, where frequently the best market would be an adjoining county, it would be the job of the central agency to know that and to provide for that.

Mr. Legge: The local elevator would obviously tell the central agency what they could obtain locally for it. If that price was as good as it was possible to obtain elsewhere, it would unquestionably be sold locally. If there was some other market open that offered a better price the grain would be shipped to that market.

Dr. H. C. Taylor: What is the plan for limiting the production? Like the steel corporation? How would you go about that, say, in wheat and corn?

Mr. Legge: That is up to the gentlemen in the agricultural colleges of the country. It calls for a campaign and it can never be done except as the farmers become organized and where the story can go back home to the farmer. There is no way you can do it by legislation under the constitution of this country, and I doubt if it can be done anywhere. You cannot compel the farmer, but perhaps you can convince him. If he gets more money for producing a little less it may have an argument that will reach him in the course of time but it cannot be done in a hurry.

Dr. B. H. Hibbard: May I ask you further on that same line? Is there any hope whatever of doing that while the farmers are unorganized, if you had even half of them as they do have in Canada, educated to produce less?

Mr. Legge: Well, that reaches almost any limit. You know the possibilities. I remember a number of years ago out in San Joaquin Valley in California at the time they were reorganizing the grape industry, that problem existed, and the persuasive action of these organized farmers perhaps was not in strict accord with the laws of the country, but

they were very effective. In other words, a producer either joined it or moved out.

Dr. E. B. Brossard of the Tariff Commission: Does the Board have any plan for meeting the competition of private dealers in the grain business? Does the central marketing agency contemplate the competition from the now established traders, and if so, how are they going to meet that?

Mr. Legge: Certainly they will have that competition to meet, but if we assume, and I think we may, that the manager of the cooperative may become equally efficient, with the volume back of it that belongs to farmers—no advertising or soliciting to get it—certainly cooperatives have an advantage as compared to the private trader, assuming that they have an equally efficient organization for the actual sales.

Dr. Brossard: Is there any anticipation on the part of the Board that the traders will go to extreme measures to defeat the purposes of the law by competition?

Mr. Legge: They might, but as I remarked a moment ago, the Board has not any apprehension as to that kind of opposition. The only thing we are worrying about is the collective action of our own clients, the farmers. That is going to tell the story in the question of the opposition of outsiders.

Dr. Black: In case there are not enough, the cooperatives now in existence don't handle 50 per cent of the commodity, we will say—that is, of course, the report—is it the intent of the Board to encourage the formation of additional cooperatives or expand those already in existence?

Mr. Legge: Both. That is a rather complicated question. It presents difficulties. We have in this country four large national farm organizations. They are all doing good work, working for the cause of agriculture. It is not our privilege to say whether the Farmers Union or the Farm Bureau or the National Grange, or some other farmers' organization is the better. All we can do is to extend equal facilities to each and try to encourage them and in some sections we have men in the field developing entirely new cooperative organizations in order that they may tie into the general program.

Question: Do you anticipate any difficulty in finding the right type of men to head up these vast cooperatives?

Mr. Legge: Indeed, we do.

Question: It opens up a big problem.

Mr. Legge: It does open up a big problem, but they can be found, in my judgment they will be found, not without some mistakes, however. We do not expect that all will be 100 per cent on the start. But time will tell the story. It is not at all impossible.

Dr. Erdman: Are there any further questions?

Mr. Legge: I thank you for your consideration. You could have asked a whole lot more embarrassing questions.

SOME POSSIBILITIES AND PROBLEMS OF THE FEDERAL FARM BOARD

JOSEPH S. DAVIS

FEDERAL FARM BOARD

This paper is not official. It was conceived and partly prepared, and I had agreed to give it here, before there was any question of my having a connection with the Farm Board. My service with the Board has been too brief to affect my views materially. I will not pose as an outsider, but what I here express is written from the standpoint of an outsider, not an insider.

I do not propose to paint, against a dark background of farm distress, a glowing picture of unlimited beneficial changes that some idealists hope will flow from the existence and activities of the Federal Farm Board. Nor, on the other hand, shall I magnify the difficulties the Board will encounter, or minimize its potentialities. Nor shall I attempt to make a downright forecast of the Board's experiences and achievements. I am neither prophet, cynic, nor dreamer. Rather I undertake a sort of reconnaissance survey of some of the reasonable possibilities and problems of the Board. Since I cannot begin to cover the field, I trust that those who follow will supplement my statement as well as criticise it.

The establishment of the Board, with the powers conferred upon it, constitutes a distinct departure in our national policy. It is set up on behalf of the farmers of the nation, not to regulate or control, not simply to study and recommend, but to act—to *do things*, primarily in the economic sphere, to raise the status of farmers, to improve the prosperity and welfare of a great class of our people. It sprang from the conviction that in a peculiar degree American agriculture needs active measures taken to place it "on a basis of economic equality with other industries". This ideal, vague as it may seem, constitutes the challenge to the Board.

Paper read at the 20th annual meeting of the American Farm Economic Association, at Washington, D.C., December, 1929.

The broad objective in establishing it may be expected to survive modifications in the legislation under which it was created; and unless the Board should come to be regarded as a rank failure and be abolished after a brief career, it is likely to find the scope of its work broadening as the years pass. The Board may well become a "board of major strategy" for agriculture. It will be unfortunate if it should become so absorbed in immediate pressing tasks as to fail to attain this larger position.

The creation of such a body should be heartening to farmers. One of the outstanding possibilities is that the fog of discontent and bafflement, which has been too general, may be dissipated in part with the aid of the Board's efforts, and replaced by a more wholesome and agreeable atmosphere. It is not within the bounds of possibility that a radical and extensive change in farming *conditions* will promptly take place in consequence of the Board's creation and work. The practical possibility is that, with the aid of earnest efforts of a group of able, devoted men, the problems that farmers face will be resolutely and intelligently attacked, as well as studied, and solutions gradually worked out. It is not too much to hope that the Board may succeed in mobilizing unrecognized powers among farmers themselves, and in enlisting resources of other groups, in dealing with certain problems; and that these problems may thus be met with greater success than if the Board merely employed its own direct efforts.

Outstanding features of the Agricultural Marketing Act, under which the Board is now functioning, constitute as noteworthy a departure in national policy as the creation of the Farm Board itself. The Act rests on the theory that a major step in raising the status of the farmer will be achieved by perfecting the marketing system, and further that the principal agencies for improving the marketing system are cooperative associations and other bodies owned and controlled by the producers. The Board is "authorized and directed" "to encourage the organization, improvement in methods, and development of effective cooperative associations", and to draw upon a fund of \$500,000,000 to make loans to them, or to recognized corporations under

their control, for various purposes, on non-commercially easy terms. Here is a notable recognition and special encouragement of a new type or types of marketing organization, to which the Board, at the behest of Congress, must give preferences, and upon which the Board is to rely for much of the desired improvement in marketing efficiency and economy, and for much of the control and regulation of marketing movements.

The experience of a number of existing cooperatives, here and abroad, has revealed substantial achievements, both tangible and intangible—for the latter are sometimes the more important. This experience, and the investigations of the Division of Cooperative Marketing, have revealed numerous principles of good and bad procedure. There is a reasonable possibility that, under the guidance of the Farm Board (and some measure of control in consequence of its loan funds) there will be much more general observance of tried principles, application of effective procedures, and more genuinely successful marketing experience. Wastes and inefficiencies in marketing afford ample scope for improvements, in many lines if not in all. More and more, cooperatives should be able to enlist able, experienced managers, operating under reasonable conditions. Substantial and effective advance of the cooperative movement may be looked for, and with it higher standards in the trades concerned. Moreover, with the development and extension of cooperative organization, the Board may find that it can deal with and through organized agriculture, even in matters not concerned primarily with marketing, in a more effective way than would be possible without this important development of farmers' organizations.

Unquestionably the Board will encounter serious problems in carrying this policy into effect, even though there be no question of complete reorganization of the marketing system along the new lines. The Board will obviously have to expect resistance and attack from legitimate business enterprises organized under forms with which the cooperatives and their agencies will compete, and which they will in some measure absorb or displace, with the aid of special favors authorized by the basic Act. Complaints of unfair

competition, Government in business, subsidy to cooperatives, will be made with much force. To reduce the grounds for such criticisms, to minimize friction and losses incidental to the execution of the policy laid down in the Act, will tax the best abilities of the Board.

One major problem of the Board will be to retain the good will of liberal-minded business men even when their interests appear to be adversely affected by the growth of cooperative enterprise; and another will be to insure that cooperatives and their offspring which have the support and sanction of the Board shall command the business respect of their competitors and customers. It is not too much to expect, in certain fields, the raising of the plane of competitive operations and improvement of undesirable trade situations, if the Board's work is really successful.

A deeper problem must be noted here. Effective as cooperatives have proved in certain cases, it is quite too early to say that they constitute the most advantageous form of marketing organization for all farmers, in all regions, in all fields of marketing; or that, if they can ultimately prove themselves to be such, they can be developed to such a stage within a brief period, even with powerful aid, financial and otherwise, from a Federal Board. Not soon, if ever, will American agriculture be 100 per cent cooperatively organized. Doubtless the Board will be satisfied with much less than this. It should do much to build up the farmers' cooperative movement, and to improve the soundness of their organization, methods, procedures, and policies. But the possibility must be faced that in numerous instances cooperatives will fail because of tasks too heavy for the available management, or because of ill-tested procedures; and that in other instances the cooperative association may not prove the most suitable form of marketing machinery.

The problem of limiting such failures to the smallest possible number and dimensions is a serious one. The Board is charged with making an extensive experiment, yet by no means a simple experiment, made in a vacuum. Discriminating wisdom in making such experiments is more easily demanded than supplied. It is too much to expect that the experiments will be universally and completely suc-

cessful, and some may be dismal failures, some even purely for economic reasons. What is possible is that the cooperative marketing movement may so expand, on a stable footing, as beneficially to alter the complexion of the marketing structure, and to afford the opportunity for constructive improvements that do not readily emerge from purely competitive operations of middlemen. In particular, there is the possibility that the cooperatives may exert greater influence upon the quantity and quality of the production, and upon its preparation for the market, than can be expected from agencies not of their own, or through non-commodity organizations.

The Board will have to decide how far it will go in promoting and, later, in supporting cooperatives. At the outset, in the case of some of the newly-promoted ones, producer ownership and control will exist more in name than in fact. It is hardly possible that such a situation should continue indefinitely. The problem will be to bring about the reality. Public aid, in the early stages, can be justified on the same grounds as tariff protection of infant industries. But unless the cooperatives and their merchandising or stabilization corporations attain a position where they can stand on their own feet, except as they may be recompensed (in effect) for public service rendered, the experiment will have failed. There is some danger that the cooperative movement may be swelled by new members and new organizations lacking the spirit of genuine cooperatives, to the detriment of the tone and temper of the movement and the success of particular enterprises. Insofar as public aid, disguised in easy credits and losses to a revolving fund, may be offset by expensive operation, unmitigated by fresh services to farmers or the public, the farmers will not reap benefits, and there will be no offset to the costs to the Treasury and to private business that may have been displaced.

One of the interesting possibilities before the Farm Board is that in many fields the marketing tasks may be viewed as a national unit, and a greater measure of coordination introduced into the inter-regional and inter-commodity competitions. Here lies a large field for the Board in conjunction with commodity advisory committees. Centralized na-

tional sales organizations will presumably be set up in several cases, but in many others a looser coordination or a limited centralization will presumably prove adequate. The marketing problems of different agricultural products vary so much that no single pattern of organization and procedure will suffice. Problems here cannot be escaped. A national organization may prove unwieldy, and particularly so when it rests on the base of cooperative associations, with democratic forms of control. A national organization of some kind may be in the interest of all; but in determination of policies and practices a great many jealousies and divergencies of interests will come to the fore. The most competent associations, from a business standpoint, may not be most effective in the determination of general policies. To resolve these difficulties will call for wisdom and diplomacy of a high order; but the efforts may well yield valuable results in inculcating larger views, attracting bigger leaders, and promoting the adoption of broad-gauge policies.

The field of stabilization measures is difficult to explore—in part because the term is loosely used in several different senses. With properly developed organizations and with experience, it will presumably be possible to limit the extent of exceptional price declines—but usually at a cost that is commonly overlooked. Some moderation of seasonal and year-to-year fluctuations is also possible, but usually at a more or less considerable cost in carrying charges. With some commodities there is considerable possibility of diverting special surpluses, at a particular season or in a year of large outturn, into special channels. With many there is a possibility of more effective regulation of production itself. But the *net* gains to farmers from stabilization measures, so-called, are among the possibilities most difficult to appraise in advance of the attempt.

The problem of how to restrain or regulate production is one of the most important that the Board will have to face, either in connection with stabilization efforts or in connection with a persisting recurrent tendency to overproduction. This problem will presumably be attacked from a number of different angles. Except as it is solved, the Board will have

difficulty in achieving the high purposes for which it was established. But no one is yet in a position to say how it can be done.

Two possibilities deserve special mention in this connection. In the first place, it is generally conceded that our land policies need overhauling. Problems of conservation of our soil and water resources, reforestation, and reclamation need to be linked up more closely with problems of overproduction of farm products. The interest of the Farm Board in control of chronic overproduction gives it a position from which it may possibly be able to exert influence toward a wise readjustment and coordination of policies in such matters.

In the second place, it is clear that contraction of agricultural activity and output is far more difficult than expansion; that profound agricultural depressions, such as we have experienced since the War, usually follow abnormal expansion; and that this is usually associated with monetary inflation. One of the serious problems of the Board—remote though it may now seem except in a few commodity lines—will be to find the counterpart of procedures by which, since 1921, great booms in business activity have been avoided and business recessions have been held within moderate limits. One of the larger aspects of the problem of overproduction is thus intimately related to the problem of agricultural cycles.

There are a number of other possibilities that are, or may eventually come to lie, within the scope of the Board's achievements, even though they are not covered, or given any emphasis, in the Agricultural Marketing Act. Indeed the event may prove that they will make, in time, greater contributions than those that are given so much space in the Act. Two more deserve brief mention in conclusion.

It is reasonable to expect that the Federal Farm Board will eventually obtain, as a necessary part of its activities, a clearer appraisal of the agricultural situation, as a whole and in its component parts, than it has been possible to obtain heretofore. I do not mean to say that it will do this through its own efforts or staff. In fact, probably an insignificant part will come thus; in the main it will come from inves-

tigations and inquiries by the Department of Agriculture, and other Federal, State, and private agencies whose work may be stimulated and in a measure guided in this direction, in consequence of the Board's need for such appraisal. It will be urgently needed as a basis of action, and only the soundest appraisal will stand the tests imposed by action.

It is also fair to expect that the same process will contribute materially to the more effective formulation of our national agricultural policy. I do not mean that the Farm Board will determine that policy; that lies with Congress. But the experience of the past decade has revealed weaknesses in our machinery for formulating policies that will be at once concordant and workable. It is not visionary to expect that the Farm Board should contribute much to this end.

I have doubtless mentioned a number of possibilities that will not be realized, and certainly omitted reference to many others that will be translated into actuality. I have touched upon only a few of the problems that will be encountered. In conclusion, let me add that it will be unfortunate if too much is demanded of the Board, and particularly too excellent a showing of results in the first year or two. The task is a gigantic one. No group of men can discharge it promptly. Extreme pressure and haste are liable to retard real progress, rather than to promote it. Modifications in policy and modifications in the founding Act are to be expected with experience. The full justification for the Board's existence will appear, if at all, only after the lapse of several years.

DISCUSSION BY E. F. DUMMEIER

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I have not had an opportunity of reading Doctor Davis's paper. My comments on the subject must therefore be somewhat independent of what he may have said.

In commenting on the possibilities and problems of the Farm Board it would appear that the essential question is: To what degree may the Board be expected to achieve the objective or purpose of the Agricultural Marketing Act as stated in the title to that act, namely "Promote the effective merchandising of agricultural commodities and place agriculture upon a basis of economic equality with other industries"?

The law authorizes the Board to employ primarily four means, as a large

and rough classification, in the attainment of the purposes of the Act. The first of these means, captioned in the Act as "Special Powers of the Board," may be labeled "Investigational and Educational Services." The enumeration of these services constitutes Section 5 of the Act. The Board is directed (1) to promote education in the principles and practices of cooperative marketing of agricultural commodities and the food products thereof; (2) to encourage the organization, improvement in methods and development of cooperative associations; (3) to keep advised from any available sources and make reports as to crop prices, experiences, prospects, supply, and demand, at home and abroad; (4) to investigate conditions of over-production of agricultural commodities and advise as to the prevention of such over-production; (5) to make investigations and reports and publish the same, including investigations and reports on the following: land utilization for agricultural purposes; reduction of acreage of unprofitable lands in cultivation; methods of expanding markets at home and abroad for agricultural commodities and food products thereof; methods of developing by-products of and new uses of agricultural commodities; and transportation conditions and their effect upon the marketing of agricultural commodities.

In addition to these investigational and educational services, the Board is furnished a revolving fund which it is authorized to loan on favorable terms either to cooperative associations or to stabilization corporations, the latter organizations to be owned and controlled by cooperative associations.

The two additional means which the board may use are, first, to assist the organization of, and to control the operations of, clearing-house associations; and, second, under specified restrictions to insure cooperative associations against loss through price decline of the commodity handled by the associations.

These two means appear to offer but little possibility for promoting the object of the Act. Clearing-house associations, as that term has been used in connection with the marketing of agricultural products during recent years, have in a few instances apparently contributed some temporary advantages. Almost universally, however, they have failed, and I know of none that can be regarded as being on a permanently established basis. They attempt to combine the interests of those whose objective it is to take as wide a margin as possible for marketing services with the interests of those whose welfare demands that marketing costs be reduced to the minimum possible; they tend to keep an unnecessary and uneconomical number of duplicating agencies in the business; and they attempt to bring into a cooperative enterprise those who are thoroughly noncooperative in nature and will take advantage of, or double-cross, the real cooperator, but will not carry their part of the load. Most of the so-called clearing-house associations have also suffered from erroneous ideas of possibilities of price-fixing. Without the price-fixing feature, merely as an agency for the interchange of certain types of information, in effect as a kind of trade association (represented in the marketing of Washington fruits by certain traffic associations and shippers councils), the clearing-house has some real possibilities of service. But as an important or major means for attaining the objective stated in the title of the Agricultural Marketing Act, it is not to be seriously considered. Price insurance with premiums based,

as the language of the Act appears to specify, upon actuarially determined costs, appears to have even less possibility of benefit.

As to stabilization, I am in accord with the view expressed by Doctor Alonzo E. Taylor in the Stanford Wheat Study, of August, 1929. It is pointed out that the term stabilization like "justice for the farmer," "equality for agriculture," and "orderly marketing" has a pleasing sound; but like these latter terms is not very specific in meaning; that to some the term stabilization suggests direct price elevation, but that the language of the Act as a whole does not support that interpretation, except in so far as it may be the result of a merchandizing policy; that stabilization strictly construed might lower rather than increase average returns as indicated by the studies of Doctor J. D. Black and Doctor Ezekial; and that the Agricultural Marketing Act considered as a whole should be interpreted as incorporating a policy of *merchandising* rather than of price stabilization, or of direct price elevation.

The possibilities of the Farm Board, therefore, appear to be in the assistance it may give to cooperative marketing, to more effective and intelligent merchandising of agricultural production, and in the other investigational or educational services it may render.

That it can render real service in these regards, and in so doing promote the economic welfare of the agricultural population, is, I think, beyond question.

The Farm Board stands high in the public mind, at least in so far as my observation goes. I believe that whatever it proposes, will, merely because the proposal comes from the Board, receive an unusually general and earnest support from the agricultural population. At least this is the conclusion one should draw from events in the Pacific Northwest.

The Pacific Northwest was not enthusiastic about the passage of the Agricultural Marketing Act. The grain growers of that region were disappointed in the Act, as they had quite generally hoped for legislation designed to lift grain prices in this country above those in foreign countries by some plan of government enforced export dumping, such as the debenture plan or the equalization fee plan. The fruit interests of the Pacific Northwest, including the existing cooperatives, protested vigorously against the proposed legislation which has since become law. In spite of these events the grain growers of the Pacific Northwest are proceeding rapidly in the organization of a marketing organization, the North Pacific Grain Growers, Inc., in close cooperation with the Farm Board. The general feeling among the fruit growers may, I think, be characterized as willingness to cooperate with any plans of the Board which will not endanger existing cooperative marketing structures and desirable trade practices which it has taken many years and some suffering to build up, and provided the plan does not have in it the possibility of the Pacific Northwest fruit industry's being sacrificed in the interest of others than the fruit growers of the Pacific Northwest. The attitude of the poultry and dairy interests, already organized to a greater degree than grain and fruit, is I think, more friendly.

The general public attitude may be characterized as one of willingness to go a considerable distance from previous ideas and prejudices in an effort to cooperate with a Farm Board program. In short, the Farm Board has the friendly attention of the agricultural interests. If its leadership is wise the beneficial results will be far reaching.

A few of the beneficial possibilities of this leadership are: (1) reduction of marketing costs by elimination of costly duplicating services; (2) increased information, or crop and market news service, not only for this country, but from foreign countries; (3) an increase of governmental assistance in developing foreign sales outlets.

Dangers which lurk, but which are not insuperable, include the following: (1) failure on the part of the cooperatives fostered by the Board to sell as well as, or to operate as economically as, the competing organizations which unquestionably will continue to function, and (2) a policy by the cooperatives of attempting price stabilization or general price elevation in such a way that the outsider not a member of the cooperative organization will be able to get more for his products than will members. Whether this is done by withholding products from one part of the season to another, or from year to year, or by other methods of umbrella holding which benefit non-members more than members, its adoption, judging by all historical precedent, will prove fatal.

Recent reverberations from the U. S. Chamber of Commerce tempt one to comment here on what is not really a matter of policy for the Board, but a question of the wisdom and justice of one feature of the legislation enacted. This is, is it justifiable to loan money to cooperatives, and to cooperatives only at from $3\frac{1}{2}$ to 4 per cent. My answer is that it is. While it must be admitted that this is in a measure a subsidy, I believe that this measure of subsidy is justified for the sake of establishing a generally socially desirable institution or practise. In the second place, cooperatives are almost of necessity required to carry more than an average share of the burdens and expenses of the industry. This small amount of subsidy no more than compensates them for what they do for the industry as a whole, from which outsiders benefit, but to the cost of which they do not contribute.

In my opinion the greatest possibilities of the Board, but its most difficult work, come under what I have labeled "Investigational and Educational Services."

Of the several features under this head I shall take time to comment on just one,—land utilization. With the increasing production per worker in agriculture the agricultural population of this country will have to be further reduced if agricultural incomes are to be raised. Any possible improvement in marketing will not solve the problem of placing the agricultural population on a basis of economic equality with other industry, unless accompanied by a reduction of workers in agriculture. Furthermore, so long as horses and mules continue to be replaced by gasoline power there will be need for a decrease rather than an increase in the acreage of land under cultivation.

The policy of the Farm Board in dealing with this problem will be watched with interest. How successfully will the Farm Board be able to get the farmers to grow a crop of only 350 millions of bushels of potatoes, (production in 1929) and sell them at a good profit instead of 466 millions of bushels, (production in 1928) and sell them at a loss? This is the real problem.

One feature of land utilization which has during recent years been much discussed is the irrigation of arid lands. Some of the worst tragedies in home seeking of which there is any record are associated with efforts in the Far West to bring under irrigation land not suited to the purposes to which it was

attempted to put it, and some of the worst of these tragedies are in connection with Federal projects. On the other hand, agricultural incomes in the Far West compare more than favorably with agricultural incomes in other parts, and the better irrigation projects represent the highest type of rural life of the Far West. According to Leven's "Income in the Various States," published by the National Bureau of Economic Research, current agricultural incomes per capita of agricultural population for the various regions in 1921 were as follows: New England, \$437; Middle Atlantic, \$422; East North Central, \$217; West North Central, \$142; South Atlantic, \$123; East South Central, \$110; West South Central, \$145; Mountain, \$315; Pacific, \$614. In the other years, the relationships were similar. For the year 1921 just named current incomes for California, Oregon, and Washington were \$726, \$451, and \$533 respectively. The significance of these figures may be better grasped when it is mentioned that for the entire South the highest comparative figure was for Delaware, and it was only \$178, and that for the entire region between the Appalachian and Rocky Mountains the highest comparative figure was for Wisconsin, and it was only \$359. I wish to emphasize that these are average figures, and that there were many tragedies in the Far West. But the point I wish to make is that the greatest need for a change in our land utilization program is to cease to attempt to operate lands so poor that nobody can succeed in the effort to make a decent living on them, be it in the East or West, and not to inveigh against the replacement of better lands and more economic operating units for submarginal lands and uneconomic units. Because we do not need more land in cultivation is not a reason for not replacing poor lands by better lands, or uneconomic units by economic units. This distinction has not always been kept in mind in the discussion of our land utilization policy.

DISCUSSION BY J. I. FALCONER

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I find in Dr. Davis's paper little with which I can disagree. I would, therefore, like to discuss two of the points which he has raised.

Dr. Davis expresses the hope that the Farm Board may contribute to the more effective formulation of a national agricultural policy. This, I believe, is a vital point. So far as we have had an agricultural policy in the past, it could perhaps be expressed as that of a "more rapid and complete utilization of our national resources," and this with little questioning as to the social consequences. Since 1920, however, this policy seems to have fallen into disrepute, not because we have formulated a better one but because the old one has proven unsatisfactory. For ten years now we have been discussing the agricultural situation and farm relief without having made much progress in formulating a policy—a good example perhaps of democracy in action. The discussion has been largely that of ways and means rather than of the end in view. Just where do we want to place agriculture, how much or of what quality do we desire our agriculture to be, and how much effort are we willing to make to put it there? These are questions which sooner or later will have to be answered.

In that excellent number of the *Annals of the American Academy of Politi-*

cal and Social Science dealing with Farm Relief one will find in black type on the front cover page the statement that "Such Legislation to be of lasting value must lead to and be part of a permanent national agricultural policy." In the 450 pages one finds much discussion of the situation and of methods of relief but little of the end in view, which leads one to think that perhaps the above statement was written as a summary rather than as the text. It would seem, therefore, that the formulation of a satisfactory national agricultural policy is a problem which we still have before us, and it is to be hoped that the Farm Board may be of assistance in the shaping of this policy as well as in working it out. Or at least that it may assist in the developing of strong organizations which will be in a position to take the lead in formulating a national agricultural policy. Success in the marketing efforts of the Board will increase rather than decrease this need for a definite national policy.

Dr. Davis has stated that the Marketing Act "rests on the theory that a major step in raising the status of the farmer will be achieved by perfecting the marketing system." The surplus problem receives much attention in the Act. Agricultural surpluses have been classified as local, regional, national, or world-wide, or again as day-to-day, short-time, seasonal, crop-year, and long-time or those persisting over a period of years. Strong coöperative marketing agencies through their marketing system should be able to do much to improve the situation with regard to the first two of these namely day-to-day and short-time surpluses. The seasonal surplus will be more difficult to get around; seasonal fluctuations can be lessened and probably a higher average price for the year secured but this will be at some cost in the way of storage or disposing of the surplus. The crop year surplus will be a still more difficult problem since the net gain to be made through holding over from years of surplus has not as yet been fully established. The most difficult problem, however, is the long-time surplus or those persisting over a period of years such as that since 1920. It is difficult to see how a marketing system alone can remedy this situation. It would perhaps be as easy to see wherein it might aggravate the difficulty rather than improve it. This controlling or adjusting of production is one of the most difficult problems the Farm Board will have to face. Its solution will be more than a marketing problem.

DISCUSSION BY W. E. GRIMES

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The statement of the possibilities of the Federal Farm Board made by Dr. Davis is excellent and one with which there can be little difference of opinion unless it be that he has been too conservative. In discussing his paper it would seem most desirable to follow his suggestion and supplement rather than attempt to criticise it.

The announced activities of the Federal Farm Board have been concerned with activities along two major lines. First has been the promotion of coöperative marketing associations on a national scale. Second, and closely related to the first, has been the lending of funds out of the Board's revolving fund to coöperative marketing associations for the primary purpose of holding farm products and promoting an orderly marketing of the 1929 production.

The work of the Board to date has not involved the extensive making of loans for the purpose of acquiring facilities to be used in "preparing, handling, storing, processing, or merchandising agricultural commodities or their food products." It is to be expected that problems pertaining to loans for the acquisition of facilities will play a much more important part in the future work of the Board than they have in the past. It is the announced policy of the Board to promote national marketing associations for practically all agricultural commodities.

The progress made in establishing a national marketing association for grains may be used to illustrate certain of the problems which it is believed will confront the Federal Farm Board and which must be solved with a reasonable degree of accuracy if the work of the Board along these lines is to endure. At present the national marketing association for grains has been brought into existence. Terminal cooperative marketing associations are in the process of deciding whether they will affiliate with this national association. The action of these terminal associations is dependent upon the vote of their member local associations. Many of these local associations are looking with favor upon membership in the national association because it appears to present an opportunity to borrow funds at a low rate of interest. The locals plan to use these borrowed funds in many instances for the purpose of adding to their facilities or handling farm products. In addition, some of the terminal marketing associations are planning on borrowing funds for the acquisition of additional terminal facilities.

The Board has announced that loans made will be to the national associations. No statement has been made as to whether the Board will exercise any supervision over the use of these loans. The settlement of this question is a decidedly important one in determining the future success of the activities of the Federal Farm Board and of its offspring,—the national marketing association for various commodities.

The problem may be illustrated by citing certain potential developments in the hard winter wheat section. One local cooperative elevator now has a capacity of 150,000 bushels. Plans are being made to increase the size of this elevator to 500,000 bushels. Another near-by cooperative elevator plans to build a new 200,000-bushel local elevator. Other plans for extensive development of local elevators might be mentioned. A terminal elevator of 1,500,000 bushels capacity is planned for a town of less than 20,000 inhabitants. Another town of less than 10,000 inhabitants has a terminal elevator under construction with a capacity of 500,000 bushels. New elevators with capacities of from 25,000 to 100,000 bushels are not uncommon in the western portion of the hard winter wheat belt.

The question that must be answered concerning each of these projects that receives a loan out of the revolving fund of the Federal Farm Board is, "Does the existing situation justify the establishment of these facilities and give reasonable promise of their profitable operation?" This question will apply to all loans made to aid in acquiring facilities for the handling of any commodity, whether grains, livestock, cotton, wool and mohair, fruits and vegetables, or some other commodity. This question can be answered only by careful studies of the situation. In the case of grain elevators in the hard winter wheat belt, these studies must take into account existing storage space,—

terminal, local, and farm; the method of harvesting and its relation to the rate of marketing and probable changes in this method; the relationship of freight rates to wheat storage at various points; the location of the demand for these grains; the diversity of uses to which the facilities may be put, such as the storage of grain sorghums, corn, barley, as well as wheat, and many other problems.

If the Board does not supervise the making of these loans and either make or have made on its own behalf the necessary studies, or insist that the co-operatives make such studies on an unbiased basis, then there is grave danger that the loans from the revolving fund may be used to establish facilities that are not justified and that will not result in profitable operation. Such a situation is certain to react adversely upon the work of the Federal Farm Board. Apparently the Board is nearing the point where either it must launch an extensive research program if its own or cooperate with existing research agencies in getting the necessary studies made. The Board has announced that it expects to follow the latter policy.

If the problem is left to the national marketing association without supervision, it should be remembered that these associations are responsible to the regional or terminal marketing associations and these in turn are responsible to the locals. Each terminal or local may have its pet project which it wishes to promote. Under these conditions there is grave danger that each terminal and local will make its support of the national contingent upon securing the funds desired to acquire the facilities planned. Failure to grant a loan might mean loss of support and patronage when this support and patronage is seriously needed. Under these conditions it would seem to be a mistaken policy to leave the question of determining what loans should be made to the national or regional marketing associations. It is difficult to conceive of a satisfactory condition under which the Federal Farm Board will not retain active and effective supervision of these loans through to their ultimate destination. This must be backed by an effective research program that will enable them to answer with reasonable accuracy the question of the desirability of the facilities to be acquired with a particular loan.

Certain matters of policy must be determined in seeking the solution of these problems. These policies should be those that will result in the greatest long time benefit to agriculture and will most fully carry out the statements of policy enumerated in the act creating the Board. The Board must decide what agricultural regions, if any, are to be favored in extending loans. Are the newer regions in which wheat and cotton production is being expanded to be encouraged by better physical facilities and a better marketing system? Just where is the marginal land for wheat and cotton production and who constitute the marginal wheat and cotton producers? Are the older or the newer wheat and cotton regions to be encouraged to continue and possibly expand or reduce their production?

In extending loans for the acquisition of facilities what requirements must be met by local and terminal cooperative associations? How thorough an analysis of the need for additional facilities must be made before a loan is granted? In the case of storage facilities for wheat, is farm storage, local elevator storage, interior storage at semi-terminals, or terminal market storage

most urgently needed or are all needed? If all or part of these types of storage should be increased, what should be the proportion between them to give the most efficient and most profitable marketing of wheat?

Obviously, careful studies of these situations must be made. However, who should make these studies? The Board has announced that it plans to use existing research agencies but these agencies have programs of work under way which, in many cases, cannot be readily shifted on short notice to take up studies which will yield information helpful in solving the problems mentioned and the many others that will present themselves for solution as the plan of the Board are carried into action by cooperative associations. It may be suggested that the various research agencies should anticipate these needs in their studies. This might be possible if funds and personnel for research were more abundant but with limited facilities for research, a complete program is impossible and any attempt on the part of existing federal and state research agencies to anticipate the research needed would be a matter of groping in the dark. Clearly, the initiative in suggesting the lines of research that will be most helpful in carrying out the provisions of the Agricultural Marketing Act of 1929 must come from the Federal Farm Board. Furthermore, the Board will need to assist in correlating the work of various research agencies on the specific problems under study so that the efforts put forth may be most productive.

There is grave danger in loans made for the acquisition of facilities unless these loans are made on the basis of the best possible analysis of the need for the facilities. Facilities secured which do not prove profitable will make it difficult to meet interest and principal payments and will result in loss to the farmers concerned if not to the Government. This will tend to discredit the entire movement in the minds of the farmers and will give those people who oppose it definite facts to reenforce their opposition. Of still greater consequence are the broad questions of national agricultural policy which must be either definitely stated or implied in deciding upon the loans to be made and the sections of the country to be favored.

From the standpoint of the development of national cooperative marketing associations the situation is acute. Local, terminal and national marketing associations are in the position of horse traders, with the patronage as one horse and loans as the other. The interest of agriculture as well as of the entire public demands that these arrangements be effected in the manner that will result most nearly in accomplishing the purposes of the Agricultural Marketing Act of 1929. This can be done only on the basis of carefully made studies of the situation. These studies should not be delayed and the initiative in focusing the efforts of the various Federal and State research agencies on the problems must come from the Federal Farm Board.

FARM RELIEF MEASURES IN SELECTED EUROPEAN COUNTRIES

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In Europe, as in the United States, the tide of government action for farm relief reached a higher point in 1929 than in any previous year of the decade of severe depression now closing.

Farm relief measures for present purposes can be defined as governmental arrangements, whether they prove to be temporary or permanent, so far as they are occasioned by a recognition of agricultural distress, and are designed to alleviate it. Farm relief and agricultural encouragement are not necessarily synonymous. Governmental action for encouraging agriculture may be applied at such times and in such ways as may not necessarily imply a purpose of relieving a discouraged condition in agriculture. Acts of agricultural encouragement may involve an expectation of public benefit to be realized over possibly a long period, this to be manifested, in part, at least, by an expansion of the varieties, an increase in the abundance of the domestic production of foodstuffs and agricultural raw materials, or both. Efforts of European countries to promote the production of sugar, for example, have come under the heading of encouragement rather than that of relief. Acts of agricultural relief are concerned more particularly with increasing the stability of established producers of farm commodities, established lines of agricultural production, or both, and with influencing the distribution of burdens and benefits so as to reduce an acute unfavorableness in the position of agricultural producers in respect to their agricultural production, marketing and consumption.

Some relief acts are directed toward reducing burdens on productive property, such as taxes on farm land, some toward reducing interest charges, some toward reducing the

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prices on farming requisites or other products which farmers buy, but most of them have been designed to raise the prices received by farmers for their products, by reflection of reduced marketing margins, by orderly holding, or by port duties and cancellation of duties, and other taxes and waivers.

There can be no doubt that the situation in most countries of Europe since 1920 has been such as to call for many proposals for farm relief. The sub-committee for the International Economic conference at Geneva, Switzerland, May, 1927, assembled data indicating that the power of marketed farm products to pay for items of household consumption was lower in 1925-26 than in 1913-14 in each of the 14 countries of Europe included.¹ In power to pay for labor and other production items the decline was from 100 to 93.1. The corresponding shift in power to pay for items of household consumption was from 100 to 70.8.

The statistical basis for these inferences is all too narrow. Ten of the 24 important agricultural countries of Europe are omitted.² In the case of the four countries, for which the figures seem to indicate that the power of marketed farm products to pay costs of production had been increasing, there is some basis for the belief that a showing for all branches of agricultural production would have indicated less departure from the trend shown in the other countries.³ The fact is that it would be difficult to name a single country for which statistics adequate for such comparison have become available.

Even in Denmark, where cooperative methods have accomplished so much, the Danish Farmers National Congress, April 15, 1929, attacked the Government's inability to decrease the burdens of the farmer. It was stated that 33 per cent of the Danish farmers faced bankruptcy in the near future.⁴

¹ Austria, Belgium, Bulgaria, Czechoslovakia, Denmark, Estonia, France, Germany, Hungary, Netherlands, Norway, Poland, Switzerland and Yugoslavia (Agriculture and the Economic Crisis, Economic and Financial Section, Documentation, C.E.I. 43).

² Finland, Greece, Irish Free State, Italy, Latvia, Lithuania, Portugal, Russia, Sweden, and United Kingdom.

³ Such a view was expressed by Professor Ivan Moloff, University of Sofia, former minister of agriculture for Bulgaria, on a recent visit in this country.

⁴ *Chicago Tribune*, April 16, 1929.

Relief Efforts in Earlier Depression Periods

In Europe, as elsewhere, like times tend to bring forward like proposals. The agricultural depression of the 1920's has been no exception. Some of the forms of farm relief given expression in government actions proposed and undertaken recently are based on experiences with policies adopted in periods of low prices during the nineteenth century and even earlier. A brief review of types of such actions will afford a basis for appraising the more recent developments from the standpoint of probable permanence and possibly also from other standpoints. During the 18th century in the reigns of Frederick William I, and Frederick the Great, Prussia set up a state grain reserve organization. The plan was described as successful because it did much to uphold prices.⁵ Again, each of the two major periods of low prices for farm products in the nineteenth century was the occasion for bringing forward in the interest of some branches of agriculture special changes in the protectionist régime, the former in France, the latter in Germany, and in these and other countries, especially during the last three decades of that century, efforts by means of import duties and otherwise to shield agriculture from the full brunt of North American and other foreign supplies of staple farm products.

The post-Napoleonic period was one of difficulty in the agriculture of many parts of Europe, especially western and middle Europe. To determine the extent to which measures were applied which would now be classified as farm relief measures is beyond the scope of the present attempt. Prices of non-agricultural products for the most part were falling even more rapidly than those of agricultural products. This gave considerable offset against high land taxes and other burdens. In England the trend was toward the removal of import duties and the withdrawal of protection from English agriculture. Reform of land tenure made considerable progress on the Continent. In France one development took place during this period which had its significance partly through its demonstration, probably for the first time, that

⁵ Schoenfeld, W. A., in *Foreign Crops and Markets*, March 29, 1929.

a rigid régime of import protectionism could be mitigated in the interest of higher prices for exportable surpluses of raw materials. The experience referred to became subsequently the object of intensive and constructive analysis at the hands of German economists and statesmen, and has some claim to brief consideration at this point.

France is one of several European countries which from the standpoint of grain have not been classifiable either as distinctly import or export countries. In this paper the term demi-export will be used as a tentative designation.

France had import duties against foreign wheat and other cereals during the post-Napoleonic period of price decline, but used much Russian grain in her southern provinces. From her northern provinces, however, wheat and wheat flour were exported, principally to Belgium. Fairly expensive transportation charges prevailed on wheat and flour shipped to the South from the North of France, whether an overland or mostly sea route were taken. The desire to mill more wheat than was grown in France was believed to be consistent with continuance of the import duties. Recourse was had to the principle of temporary admission which had been inaugurated by Colbert, July 12, 1672, and was operated through a system of surety (caution) and releases from surety (*acquits-à-caution*) begun July 15, 1719.⁶

Post-Napoleonic Broadening of Surety Releases

Although initially designed as a system of safe conduct for foreign product on its way through France, the surety release system was markedly broadened by various ordinances and decrees during the period, 1815 to 1850. These liberalizations enabled wheat of French growth or flour made from it to move into export on a basis of substitution. Such substitution had at first a status much like that of a passenger who rides out the unused portion of a return ticket brought from the scalpers, but in time the practice gained fairly general sanction.⁷ Millers at Lille or other northern French cities could do this substituting to the ad-

⁶ Lexis, W., *Die Französischen Ausfuhrprämien*, Jena, 1870.

⁷ Gide, Charles, *Cours d'Economie Politique*, 1913; Pallain, G., *Les Douanes Françaises*, 1910.

vantage of themselves and their region, expanding their exports of grain and flour. Except as the northerners fell short of exacting the full amount of the temporarily suspended import duties in setting their charges for completing the transactions necessary to obtain release from surety, there could be no motive to induce the increase of importation which in its turn made possible the increase of exports. Northern millers at times received as much as 5 out of the 7 francs but this proportion varied.⁸ This bounty on exports from northern France was one which raised grain prices in that part of France to a point more nearly corresponding to the tariff-supported level which prevailed in southern France, which, as already indicated, was a deficit grain area shielded by the wall of import duties at the frontier and by the protective effect of fairly expensive transportation charges on grain and flour shipped south from the northern part of the country.

The earlier price depression period of the nineteenth century in France had seen the development of a variable export bounty for the benefit of the northern Provinces. The later period in France saw a return to a less liberalized plan of temporary admission for the better safeguarding of southern French agriculture.

Concessions to Agriculture, 1870 and After

Speaking more generally with reference to the farm depression of the 70's and 80's in western and middle Europe,

⁸ The French surety releases were granted by the government to one presenting for export grain or flour in an amount corresponding to the importation on which surety had been given. Unless released from surety the importer was held for the duty and a penalty as well. Whoever relieved an importer of his surety liabilities at a figure less than the full duty would assist the importer. If there were much exportation compared with the amount of importation enough exporters might offer to do this release-gaining service for importers to enable the importers to escape duty on all they brought in, the exporters requiring but little to cause them to handle the service for importers. On the other hand, if there were little exportation compared with importation, only a few exporters could offer to render this service for the importers, and the importers would have to pay the exporters so highly as almost to make it a matter of indifference to the importers whether they entered their goods under the surety-release plan or paid full duty on them. The former case, that in which importers profited by the competition among exporters for the release titles is that of abundant French harvests. Impairment in the efficiency of import duties then was not welcomed. The latter case, that in which exporters were able to count upon large rewards for taking part in the transactions with surety releases, is that of poor harvests in France. "The landlords of the South soon began to complain that they were not sufficiently protected against the growing overseas competition resulting from impairing the duties on imported grain during their years of abundant yields when they desired as high prices as possible no less than in other years. Some foreign countries also, notably Belgium, protested against this form of bounties on French exports. As a result of these objections the edict of October 18, 1873, restored the old provision that in each case of offsetting import and export shipments the same customs office should be used." (Grunzel, Josef, *Economic Protectionism*, p. 220, and *Handelspolitik*, chapter entitled *Steuern und Praemien*).

it appears that while the decline in prices of farm staples was accompanied by a decline in prices of non-agricultural goods, the result was also a rather general decline in the exchange value of farm products. The resulting difficulties were surmounted variously in different countries.⁹ The choice lay mainly between (1) changing the direction of production, concentrating farming energies upon products the prices of which were not depressed so severely and (2) resorting to arrangements for influencing the price by means of commercial policy. English and Dutch agriculture went the former way, there being marked contraction of cereal production in the Netherlands and almost complete abandonment in England. Stock breeding came to the fore in these countries, the emphasis being not on a large volume of medium-grade meat products, but on finished feeding for the production of meat products of the highest quality. Cattle feeding was supplemented by productions whose superiority was but little challenged by foreign competition, for example, poultry feeding, production of eggs, and the growing of small vegetables and fruits.

In Switzerland subventions designed to aid the transition to dairying made their appearance during this period.⁹

In Germany, the farm depression of the latter decades of the nineteenth century was the occasion for development of import certificates introduced in 1879 and brought to a striking state of liberalization by 1894.

Germany, like France, was a demi-export country. Grain-surplus provinces were of the North whereas grain deficit was a usual characteristic of the South; more specifically, the exporting provinces were those of the Northeast, whereas importations were usually needed in the West and South. As in France, costs of overland transportation between the two groups of provinces were relatively heavy. Transportation by water, which was cheaper, was cut off in considerable measure by the import duties which were imposed as a part of the German protective system. Previous to 1879 the only system of customs alleviation in force in Germany as regards agricultural products was that of strict identity

⁹ Landmann, Julius. *Die Agrarpolitik des schweizerischen Industriestaates*, Jena, 1928, p. 20.

which applied to the transit warehouses, whether these exported only foreign grain or were mixing warehouses, in which foreign and domestic grain was mixed for exporting purposes. Under this system the customs and the warehouse-keeper kept running accounts. At periodic intervals the account was struck, and the importer was liable for every excess of his imports of grain in the period over the amount of foreign grain re-exported. This system was one of strict identity so far as the person importing, the place of import and export, and the species of imported and exported product were concerned.¹⁰

The first breach in this system was made in the interest of the millers who from 1879 on were allowed to re-export flour made from foreign grain under a drawback arrangement. The amount of grain so converted was often difficult to determine, as the flour actually was of mixed origin. Consequently an act of 1882,¹¹ allowed millers to import duty-free an amount of foreign wheat equal to the amount of flour exported. Proof of identity was set aside for milling so far as the nature and origin of the grain were concerned, but was retained for the person and the place of export.¹² Later in the 80's, as the agricultural depression continued, the farmers demanded an extension of the system. They had the option of selling at low world prices outside the customs area, but inside the area they were forced to lose part of the possible gains by the high cost of transit between East and West. At first the attempt was made to satisfy the farmers by lower railway rates, the so-called *Staffel-Tarife*, or sliding scales, but this proved unpopular in the West both with traders and with local growers.

In 1894, a new system was introduced of granting import certificates on the exported grain. A minimum of 500 kilograms of grain exported in one shipment was established. On shipments of this quantity or more, import certificates could be used to bring about the duty-waived importation of an amount of grain equal to the amount exported, thus giv-

¹⁰ Gregory, T. E., *Tariffs*, page 415.

¹¹ June 23.

¹² Beckmann, Friedrich, *Einfuhrscheinsysteme*, 1911, p. 35. For good treatment in English, see Gregory, work cited, and *Foreign Crops and Markets*, Schoenfeld, Anderson, and others, June 28, 1926. A tentative bibliography of German works compiled by the author was filed in the Library of the Bureau of Agricultural Economics in 1928.

ing the holder the right to save the amount of customs duties accruing on this amount of grain. These certificates were valid for a period of ten months; in the first four months they could be used only in the import of grain, in the next two months for grain or other products, in the last four months for other products only. These other products were wood, southern fruits, spice, salted herrings, raw coffee, cocoa beans, cocoa husks, caviare, olives, mussels or shell fish, lobsters, turtles, tea, olive oil in casks, cottonseed oil, train oil, and fat, petroleum and mineral lubricants, a total of 19 kinds of products other than those of German agriculture. Interchangeability as between grain products was not provided in the 1890's. An *Einfuhrsche* if issued on the export of wheat, for example, might result in the cancellation of import duties on petroleum, but not any grain product except wheat.

The German Tariff Act of 1902.¹³ which went into effect in 1906,¹⁴ left the main outlines of the import certificate system as they were. A change of minor importance was the cutting down of the period of validity to six months. Perhaps the most significant variation was that which allowed the interchangeability of the various grain products among themselves. From 1894 until 1910 the German import certificate system was operated on a basis of liberality. The extent to which products that were non-agricultural or exotic were actually received into Germany on the certificate plan was not large in the case of products other than raw coffee and refined petroleum. Forty-five per cent of the amount of customs duties waived on all commodities on presentation of import certificates in 1908 was cancelled on imported coffee and petroleum. The effect of having import certificates subject to use on non-agricultural and exotic products was to cause the certificates to rule at 99.8 to 99.9 instead of 98.0 to 99.0.¹⁵

Some other features of the operation of the pre-war German import certificate system are to be noted. The period

¹³ December 25.

¹⁴ March 1.

¹⁵ Simon, Fritz. *Die Getreide-Einfuhrscheine*, 1909, p. 21. According to Simon import certificates were then salable at a discount of from 1 to 2 on a thousand. The discount of 1 to 2 on a hundred, he said belonged to the past, particularly to the period before March 1, 1906.

during which import certificates issued in 1907 were outstanding was not long. Fifty-five per cent of them (basis of value) were applied during the month issued, 41 per cent during the month following issue, less than one per cent during the second month following issues and less than one-tenth of one per cent had failed of application by the end of the sixth month.¹⁶

Considering the situation as to rye and oats for the three years 1907-1909, in Germany, export of rye against import certificates was lowest in the summer months, from June to September, inclusive, reaching its highest point in the three months following. Importations were most notable from August to October and lowest during the winter. The seasonal aspects were about the same for oats.¹⁷

The interchangeability feature which went into effect in 1906 produced interesting results. The amount of rye and oats granted certificate entry into Germany was over three times as much as the amount of these products having certificate exit. The reverse was the case with wheat. Nearly twice as much wheat was exported against certificates as was later given certificate entry. It is clear, therefore, that support of the exportation of wheat was made possible in 1908 through the importation of more rye and oats than were exported as well as the importation of coffee and petroleum. The period of validity of the import certificates was reduced to three months beginning December 1, 1911. At the outbreak of the World War both import certificates and import duties were set aside in Germany.

This rapid and all too limited examination of certain policies which were resorted to in other times of agricultural price decline may suffice as the main background for the farm relief measures proposed and applied in various European countries since 1920.

The more immediate background is that of the decade, 1910-1920, which began with discussions of the high cost of living, reached its high pitch in a war-time period of vigorous social control and patriotic incitements, and terminated

¹⁶ Denkschrift betreff end den Umfang und die Wirkung der Ausfertigung von Einfuhrscheinen fuer ausgefuehrtes Getreide, Verhandlungen des Reichstags, No. 370, March 19, 1910, p. 65.

¹⁷ Denkschrift, Tables III and X.

in an atmosphere of many questionings which presaged the severe declines both in prices of farm products and in their purchasing power which characterized the decade that followed.

As in earlier periods of low agricultural prices recourse has been had to two main kinds of approach, one through the centralized type of a buying and selling organization for controlling supplies and prices of farm products and the other through the regular and special policies administered by the customs services.

Tobacco Monopolies Not Farm Relief Devices

The national monopolies prevalent in Europe during the decades immediately preceding the World War were almost entirely fiscal in character, tobacco being the main farm product thus controlled. The number of European countries having state tobacco monopolies in 1924 was nine. To France, Italy, Spain and Sweden had been added five countries to which the war had given rise or at least new physical form: Austria, Czechoslovakia, Hungary, Poland and Yugoslavia. The Free City of Danzig also established such a monopoly in 1927. The fiscal type of state monopoly could seldom be credited with being administered in the interest of agriculture. The treasury departments have required the farmers to secure production permits before being allowed to plant tobacco. The total crops have been purchased by the government at fixed prices. Other regulations designed to facilitate governmental efforts to make a large margin of profit on its tobacco have frequently tended to the comfort of neither the producers nor the consumers.

In that which follows it will be observed that attention is directed to nearly all of Europe except Russia. State participation not only in domestic and export marketing but in production has been projected on such far-reaching lines as to justify an entirely independent treatment so that the ordinary canons of farm relief scarcely apply in the case of the Soviet Republic.

Non-Fiscal National Boards of Market Control

National boards and offices for operations in farm products designed for purposes other than producing revenue

for the public treasuries have been developed especially in the case of grain and grain products. A consideration may be given to developments in Switzerland, Norway, Latvia and Germany.

Switzerland. During the war the Swiss established a Federal grain board or grain monopoly that paid a bounty of 43 cents per bushel of 60 pounds over the current market price for all grain grown in Switzerland and delivered through it. For grain grown in Switzerland and consumed on the farm a bounty of 27 to 43 cents per bushel was paid. The debate as to whether the Federal Constitution should be amended to make permanent provision for a grain board culminated in the referendum vote of March 3, 1929. With certain safeguards for the consumer interests of the Swiss urban population, the amendment carried. A recent estimate of the costs to the federation for the payment of the bonuses over the world market price, the milling bounty, and the reduction in freight rates, together with storage costs on warehoused grain, approximates \$3,000,000 a year.¹⁸ To cover this outlay, which was formerly spread over the entire bread-consuming population, the milling bonus will be paid out of the national treasury while the balance will be covered by a slight increase in the international frontier control charges on foreign freight passing into and out of Switzerland. Among the purposes of the grain board are the following: (1) maintain supplies of grain necessary to meet the requirements of the nation; (2) require millers to take over feed stocks of grain and store them; (3) advance the culture of bread grains in the homeland; (4) facilitate the growing and acquiring the high-value seed-grains; (5) support self-sufficiency in the mountainous regions through special measures, including the reduction of foreign rates; (6) take over millable home-grown grains at prices making grain-growing possible; (7) require millers to take over the stocks of grain on the basis of market prices.

Norway. The Norwegian law of 1926,¹⁹ provided for a grain purchase and distribution monopoly with power to buy Norway-grown grain at higher prices than import grain.

¹⁸ Howald, Oskar, *Die Neuregelung der Getreideversorgung in der Schweiz*, Brugg, 1929 (Reviewed by Roth, W. J., U. S. Department of Agriculture, *JOURNAL OF FARM ECONOMICS*, December, 1929.)

¹⁹ June 25.

According to this law,²⁰ wheat, rye, barley, and oats, or milling products thereof, also mixtures of grain or milling products which have one or several of those varieties as an essential component, must not be imported into the Kingdom by others than the State, except those who in conformity with his law have received permits for such imports. In the State's purchases of Norwegian wheat, rye, and barley, the price of the highest-grade commodity must be at least the price at which the highest-grade imported commodity can be delivered at a Norwegian port exclusive of the tariff. For a poorer quality a proportional deduction is made in the price. In addition, the grain subsidy (*korntrygd*) of four ore per kilogram, or 30 cents per bushel of 60 pounds, is paid.

Norwegian wheat, rye, and barley, which a grain grower grinds for his own use and which is suitable for human consumption, entitles him, on demand, and free from any legitimization, to the same amount of grain subsidy from the state treasury, four ore per kilogram. The subsidy is allowed, however, on not more than 200 kilograms per year for each member of his household. The grain subsidy is paid only on certified proof of grinding at the mill, endorsed by the department concerned.

To settle disputes which come up between the State grain office and the importers, grain salesmen, or grain buyers, in regard to imports of commodities which come under this law, either in determining the quality and adjusting the price in the purchase or sale of Norwegian grain, or in applying the grain subsidy the King maintains at least three committees. Each committee consists of three members, one of which must have legal training and acts as chairman of the committee. Of the remaining members, one must have a knowledge of grain cultivation and one of grain trade. Disputes between the State grain office and importers come under the jurisdiction of the committee at Oslo.

Latvia. In Latvia flax is subject to national monopoly.^{20a} During the second quarter of 1923 nearly 9,000,000 pounds of flax were purchased from Latvian farmers and nearly 23,000,000 pounds were exported. The Ministry of Finance

²⁰ Translation received through the courtesy of the Bureau of Agricultural Economics, U. S. Department of Agriculture.

^{20a} Foreign Crops and Markets, Oct. 17, 1923 and Jan. 24, 1927.

managed to obtain very high prices despite the fact that foreign flax buyers had been holding back, looking forward to a drop of prices when Russia placed its stocks of flax on the market. By 1926 the monopoly was making efforts to maintain prices at levels higher than those prevailing elsewhere and with but little success. There was then talk of abandoning the State monopoly, but it appears to be still operating.

Germany. In Germany the national grain office²¹ created during the war encountered serious difficulties during the early 1920's. The inadequacy of grain storage facilities during the period immediately following the war was one of the most difficult problems encountered by the office.²² The stabilization of the mark and the imposition of high taxes caused the farmers to throw their grain on the market to such an extent that domestic prices dropped below world market levels. Millers who would have purchased from the grain office were then able to buy more cheaply in the open market. The grain office was therefore unable to sell except at a loss. After a period of suspension a movement was started for its revival. The plan was to cause it to function until July 1, 1926, with special emphasis upon rye.

In response to the agitation that something be done by the German government in buying and selling grain, the Reichstag passed in the spring of 1926 a bill granting a loan of 30 million marks to a German grain trading company.²³ The purpose of this company has been to study ways and means of rendering German agriculture profitable and to stabilize grain prices by buying, storing, and selling German grain, especially rye. The company is composed of farmers, fertilizer syndicates and others. Sixty per cent of the capital was subscribed by cooperative agricultural marketing associations and forty per cent by other interests, including German potash and nitrogen syndicates.²⁴ In the view of some members of the trade, the activities of the grain trading company prevented rye prices from rising to an extent warranted by the real situation.²⁵

²¹ Reichsgetreidestelle, or RGS, by popular abbreviation.

²² Foreign Crops and Markets, April 2, 1924 and March 29, 1926.

²³ Deutsche Getreidehandelsgesellschaft.

²⁴ Foreign Crops and Markets, April 5, 1926.

²⁵ Same, May 16, 1927.

That the German grain trading company did not meet fully the desires of German producers is indicated by the fact that one of the most important developments during January, 1928, was the crystallization of agricultural sentiment into strong expressions of dissatisfaction with the present position of German agriculture.²⁶ This sentiment resulted from two consecutive years of low returns.

Diversified Relief Measures for German Farming

Apart from customs arrangements, to which reference will be made below, the German efforts for farm relief have included emphasis on five features:^{26a}

(1) Improved credit facilities for the benefit of agricultural production and marketing.

(2) Unity of business dealings by agricultural cooperative organizations, as illustrated by the formation within the past few months of the national union of German agricultural cooperative associations (Reichsverband Deutscher landwirtschaftliche Genossenschaften.)

(3) Official efforts somewhat resembling those of our Federal Farm Board, but directed more particularly to quality products, such as milk, eggs, poultry, meat and vegetables, and operating with local, district, and regional arrangements.

(4) State participation in grain mill ownership and operation designed to control milling in the interest of agriculture. The Scheuer-Gruppe was selected for such participation when difficulties brought it to the verge of bankruptcy.

(5) Legal requirements improved by the act of 1929²⁷ that in all German milling operations German-grown cereals be utilized up to fairly high minimum percentages. In a decree of November 29, 1929, the compulsory milling of at least 50 per cent of domestic wheat was extended for the months of December, 1929 and January, 1930. This is in accordance with the law of July 4, 1929, which provided for the mini-

²⁶ Same, February 27, 1928.

^{26a} The writer acknowledges the assistance of S. von Ciriacy-Wantrup, a University of Berlin student engaged in graduate study at the University of Illinois by arrangement of the Institute of International Relations, and of Charles Kruszuski, Division of Foreign Commerce, U. S. Dept. of Commerce.

²⁷ Effective July 10.

mun of 30 per cent of domestic wheat up to July 31, 1930, but provided for the milling of 40 per cent of domestic wheat from August to November 30, 1929.

This co-milling requirement is of considerable importance, and has both war-time and early post-war precedent in several countries.

To operate national monopolies in the interest of highest prices for farm products seems to be difficult in those European countries having relatively large urban populations. The trend away from monopoly policies which do not keep the burden on consumers as low as possible, even though the public Treasury be asked to share the costs, is an interesting aspect of Swiss experience. The trend away from monopoly in Germany and toward diversified forms of farm relief and particularly toward relief through milling control is significant. There has been little tendency to follow the pattern of tobacco monopolies in their fiscal emphasis.

Customs Arrangements: Export Duties

One of the legacies of the war period was an increased number of export duties on farm products. Even where export taxes were not levied there was often a system of export licenses or permits involving increased costs to exporters.

Export duties reported to the international Economic Conference, 1927, as applied in Europe on the following:²⁸

Live animals, in 5 countries—Bulgaria, France, Rumania, Russia, Yugoslavia.

Animal products destined principally for human consumption, in 5—Bulgaria, France, Portugal, Rumania, and Yugoslavia. The rate rises in certain instances as high as 30 per cent (in Bulgaria on cheese).

Wool, in 4—Bulgaria, Greece, Portugal, Yugoslavia.

Other animal products destined principally for industrial manufacture, in 9—Austria, Bulgaria, Italy, Latvia, Poland, Portugal, Yugoslavia, Spain and Switzerland.

²⁸ Export Duties, Documentation, Economics and Financial Section, C. E. 1, 23. This includes a list of export duties for all countries. See also *Export Duties of the World*, U. S. Department of Commerce, 1927, showing export duties as of February 1, 1927.

In the United States no export duties have been imposed by either states or other jurisdictions since the Articles of Confederation were superseded by the Constitution. Article 1, Section 9, of the latter includes the sweeping statement that "no tax or duty shall be laid on articles exported from any state."

Cereals and flours therefrom, in 3—Bulgaria, Lithuania, Rumania.

Vegetables, seeds, kernels, etc., in 4—Bulgaria, France, Yugoslavia (sugar beets), Rumania (potatoes).

Sugar, in 3—Bulgaria, Rumania, Yugoslavia.

To these may be added wood, a product not exclusively agricultural. Nine countries had wood-export duties—Austria, Bulgaria, Estonia, Finland, France, Poland, Portugal, Rumania and Yugoslavia.

Export duties are to be found in countries having a preponderant industrial production (Austria, France, Italy, Switzerland, Czechoslovakia) as well as in countries where agricultural production plays a predominant part (Bulgaria, Finland, Greece, Latvia, Poland, Portugal, Rumania, Yugoslavia.)

Export duties were revived in Europe following the war as one of the consequences of inflation. Within the past few years, however, export duties have been reduced or abandoned in several European countries. This has been a feature of farm relief in several countries.

Customs Arrangements: Import Duties

Import duties, on the other hand, have occupied a position of widespread, permanent, and increasing importance. No one of the countries of Europe which have been included in this study is entirely lacking in such levies. The tendency to increase such duties has been due to the motive of protection more, perhaps, than to the motive of revenue. The use of import duties to meet the agricultural situation has been widespread among countries having deficits of specific commodities as well as among the so-called demi-export countries.

England. Even in England import taxes of a protective order have come to the fore. A declaration by Lord Beaverbrook in the spring of 1929 that import duties should be more seriously applied for the development of home-grown supplies in the United Kingdom, had foreshadowings in British policy during recent years when British war and post-war hop control expired in 1925, a duty of £4 per 100 pounds (about 17 cents per pound) was imposed upon imports of

hops from foreign countries.²⁹ In addition to tobacco and sugar, the universal objects of tariff duties, there were British import duties on dried figs, raisins, and plums, including apricots, dutiable at the rate of \$2.28 per 100 pounds when coming from foreign countries. The preference granted to products from British dominions was in effect a duty remission or waiver of 37 cents per 100 pounds, or about one-sixth, until 1925.³⁰ At that time dried fruits imported from colonial possessions began to be granted free entry. In general, imperial preference is now expressed by a waiver of one-fourth of the amount of duty in the case of imports from the Dominions. So far as the producers and consumers in the United Kingdom are concerned, such preferential arrangements are in the nature of concessions to the consumers.

That the use of import duties in the case of England and Wales, if it were seriously attempted, might have outstanding significance to producers there, is suggested by the low proportions which home-grown produce constitutes in the total requirements of those countries. The proportions are roughly as follows:³¹ wheat, one-fourth; barley, two-thirds; oats, four-fifths; eggs, two-fifths, meat and dairy products, three-fifths. While England and Wales is practically self-supporting as regards fresh milk, it would need more than double the production to supply the milk represented by the butter, cheese, and condensed milk imported.

The prospects for import tariff protection for agriculture in the British empire do not seem to be impressive. Unemployment insurance and its predecessor, the dole system for unemployed, signify a willingness on the part of the public in the British Isles to make concessions to its urban population. Farm relief policies that would in any direct way offset this by higher prices for consumers of staple products have little prospect of vigorous prosecution. Recommendations for agricultural subsidies, as made to the British Parliament on April 10, 1923, by the Agricultural Tribunal of Investigation, have been given little attention. The propo-

²⁹ Foreign Crops and Markets, October 19, 1925.

³⁰ July 30.

³¹ British Ministry of Agriculture and Forestry, *Prices and Supplies of Agricultural Produce and Requirements in England and Wales during 1922*, summarized in Foreign Crops and Markets, July 11, 1922.

sal was for a subsidy of 10 shillings (\$2.43 at par) per acre on all land under cultivation and an additional payment of the same amount, a total of \$4.86 an acre, on all land under wheat.

The most substantial concession actually made to British agriculture came under a budgetary arrangement by which productive property in England and Wales has been relieved from the burden of land taxes. While the Agricultural Tribunal of Investigation proposed subsidies which would have taken over \$31,000,000 a year from the British treasury for payments on British agricultural land, the budgetary adjustments have apparently made an annual reduction in the amount which British agricultural landowners pay into the treasury of well over half that amount. April 1, 1929 was the effective date of this change.³² A somewhat similar adjustment in 1923 had reduced the land tax burden from a basis of 50 per cent exemption to that of 75 per cent exemption.³³ A similar proportional reduction by the 48 States of the American Union and by local jurisdictions would reduce the annual tax burden of American agriculture from about \$760,000,000 to about \$380,000,000.

That the national governments of Europe have come to use tax reductions, remissions and waivers as favorite patterns of farm relief has already been suggested. Tax reduction has had special prominence in England and Wales. The absence of a well-defined structure of import duties on agricultural products entering Great Britain has gone far to keep the remission and waiver principle from being applied there, the nearest application in the tariff system being that of preferential treatment of imports of dutiables from overseas Dominions.

³² Lee, F. E., *Commerce Reports*, U. S. Department of Commerce, May 7, 1929. The projected assistance would grant total exemption from local taxes to all farm lands and farm buildings (except residences) and exemption up to 75 per cent of their valuation to all other productive premises except public utility companies. It is estimated that agriculture will benefit directly under the scheme by £4,750,000 annually, manufacturing and mining industries by £21,000,000 and railways, harbors and canals to the extent of £4,000,000 a year on the condition that it be passed on in its entirety to agriculture and heavy industries in the form of lower freights and dues.

³³ *International Yearbook of Agricultural Legislation*, 1923, pp. 231-236; 1925, p. 309; and subsequent volumes.

Customs Arrangements: Export-Import Certificates

For recently expanded applications of the remission or waiver principle in tariff legislation in Europe, we must turn again to Germany, to Czechoslovakia, Sweden, and Hungary, and, because of steps taken so recently as to be almost unreported in American publications, Austria, Latvia and Poland.³⁴

Germany. After a period of suspension during the war and for a few years following it, the import certificate system of agricultural export premiums was reintroduced October 1, 1925³⁵ effective on grain and legumes, and have since been in effect except during a period of less than six weeks when suspended in order to retain certain supplies in Germany rather than cause them to be exported.³⁶ The form in which certificates were readopted in 1925 was less liberal than that of the period, 1894-1910. Efforts to liberalize the plan have made some headway, at least so far as to result in four steps: (1) increase in rates of duty and bounty, August 1, 1926,³⁷ (2) the extension of the system to include buckwheat in 1927³⁸ and hogs and hog products in 1928,³⁹ (3) increases of the rates of duty and bounty, effective July 20, 1929 and (4) the movement to extend the system to include other meat and meat products.⁴⁰ Press reports of this week indicate that the German bounty rates are to be further increased.⁴¹

The amount of rye and oats granted certificate entry into

³⁴ A rumor that France is planning a vigorous export bounty program is reported by Chappell, F. C., *Foreign Subsidies and British Agriculture*, *Tariff Review*, December, 1929. No reference is made to the possible part that may be played by acquits-a-caution in such a program.

³⁵ For discussions of the German system as readopted see Hermes, Richard, *Reichsfinanzkalender*, 1928, pp. 98-106; *Jahrbuch fuer Answaertige Politik*, 1929, pp. 115, 116; *Foreign Crops and Markets*, March 29 and June 28, 1926. For statistics, see *Der Auswertige Handel Deutschlands, im Jahre 1928 Verglichen mit den Jahren 1926 und 1927*, pp. 112, 113.

³⁶ Translations of German decrees of September 3 and 12, 1925, and July 14, 1926, of the Czechoslovak law of July 9, 1926, and of the Swedish law of 1926, are printed in *Hearings*, 70th Congress, 1st session, House Committee on Agriculture, Serial E—Part 5 (February 10, 1928), pages 386-388.

³⁷ *Foreign Crops and Markets*, April 26, 1926.

³⁸ August 1, 1927.

³⁹ April 15, 1928.

⁴⁰ *Agricultural Economics Literature*, December, 1929.

⁴¹ To some, indeed, the import certificate system seems to have become so completely identified with the whole scheme of protective tariffs that modifications are not necessarily thought of as having the special character frequently associated with farm relief measures. Note in this connection an article by R. E. Bose, *Aid to German Agriculture*, *Annals of the American Academy of Political and Social Science*, March, 1929, in which no mention is given of the import certificate system. It is possible that this article was written under an impression that the import certificate system was being treated by other contributors to the same volume. Agricultural commissioner reports from Germany, however, have consistently regarded import certificates as farm relief instruments.

Germany in 1928 was only a fraction of the amounts of these products exported from Germany with certificate benefit. The excess of certificates issued on the exit of these products over the certificates cancelled on their importation that year was over \$8,000,000. With wheat the excess was one of imports over exports.⁴² This presents a contrast with the situation of 20 years before.

Czechoslovakia and Sweden. Both of these countries began certificate arrangements³⁶ in 1926.⁴³ In both countries the original provision was for a trial of 24 months. In both countries the provisions have apparently continued without diminution since the end of the probationary period.⁴⁴

Austria and Latvia. The Austrian and Latvian systems of certificates were introduced in 1929.⁴⁵ The Austrian system applies to live cattle in addition to wheat, rye and oats. The Austrian rates are low. Under the Latvian plan eggs are included along with clover and timothy seeds and oats, barley and barley products on the side of issuance. These certificates may be applied to cancel or reduce the import duty on wheat, sugar, tobacco, fresh and dried fruit, iron and steel, iron and steel manufactures and agricultural machinery.

Poland. The Polish plan came into effect under a law of 1924, on rice in 1928,⁴⁶ early in 1929 on bacon and hams,⁴⁶ and on rice products.⁴⁷ Certificates issued on bacon and hams are handled by a specially formed syndicate, essentially cooperative in character. The application of Polish certificates to wheat, rye, oats, barley, flour, barley groats and malt was started recently⁴⁸ for a period of five months, and to natural butter for a period of six months.⁴⁹

In a report on German Agrarian Tariff Revisions completed January 3, 1930, Consul General Ravndal says, "It was proposed first to fix the value of import certificates on the basis of the lowest rate of duty stipulated for rye and wheat. This, however, would have made the purpose of the system, namely, to relieve the German market through increased export facilities, illusory." The regulations for higher rates on wheat, rye, oats and brewing barley had passed the Reichstag, the date of effectiveness to be announced later.

⁴² Der Auswaertige Handel Deutschlands, 1928, pp. 112, 113.

⁴³ August 1.

⁴⁴ In fact, the Czechoslovak provisions have been broadened to include swine and swine products.

⁴⁵ September 27 in Austria and December 20 in Latvia. To a certain extent in Austria this was a case of reintroduction not unlike that of Germany (Grunzel, Joseph, Handelspolitik, p. 125). The Latvian measure is described in Foreign Tariffs and Trade Regulations, U. S. Department of Commerce, week ending January 9, 1930, p. 7.

⁴⁶ January 29, 1929.

⁴⁷ June 12, 1929.

⁴⁸ November 16, 1929.

⁴⁹ December 1, 1929, was the beginning date for butter.

Two features of the Polish certificate experience should be noted.⁵⁰ The free city of Danzig territory, although a regular part of the Polish customs area, has been omitted from the area in which the recent certificates are issued. A vigorous protest from the Danzig area has resulted. It wants to participate in the benefit of the bounty.⁵¹

The second feature of the Polish plan goes as much beyond the most liberalized German application as Germany's plans since 1910 have fallen behind it. In fact from about 1910 Poland, first under Russian law, and latterly under her own law, has had a system of certificates issued on industrial exports which were good for duty cancellation on imported products not merely of the same description but of any dutiable variety. This feature, hitherto applicable on industrial exports, is now applicable on agricultural exports as well. Whereas certificate entry was allowed in Germany, 1894-1910, on nineteen products that were non-agricultural or non-German in origin or both, the Polish provisions are for the entry of any merchandise.⁵²

Some Features of Export-Import Certificates

The extent to which the certificates issued on the export of wheat, for example, are usable to cancel on return shipments of other products is in most cases liberalized so far as agricultural imports are concerned. In Austria, however, the cattle import bonds are good only for reimportation of cattle by the Vienna Cattle and Meat Market Finance Corporation and by the head organizations of eight designated agricultural cooperative associations.⁵³ All other Austrian import certificates have interchanging privileges. In Germany, corn (maize) and durra since April 15, 1928 have been admissible on import certificates, issued on the export of

⁵⁰ For a recent description of the Polish plan, see *Foreign Tariffs and Trade Regulations*, week ending January 9, 1930, pp. 8, 9. The courtesy of Charles Kruszewski is again acknowledged here.

⁵¹ Negotiations between Poland and Danzig are now under way to settle this matter of importance for Danzig's trade, especially for the grain trade long established in that city.

⁵² An amendment to H.R. 2667, 71st Congress, extraordinary and first sessions, provides for optional power with the Federal Farm Board to cause the Treasury department to issue on certain debenturable commodities export debentures receivable in lieu of duties on any dutiable articles subsequently imported to replace them. After action is taken by the Senate on the bill as a whole, utilization of the power would depend upon action by the House of Representatives, the President, and the Federal Farm Board itself.

⁵³ *Bundesgesetzblatt*, October 9, 1929.

other products, but do not themselves draw certificates when exported.

In all these cases, the basis of interchanging is the customs value, or amount of duties levied in case of importation. In Hungary, under a plan in effect from September 18, 1928 to September 30, 1929, a novel type of interchange was authorized. Certificates were usable only on imported corn, but were issued on fattened animals and some other products. On each 100 kilograms of fattened cattle exported, 123 kilograms of corn might be imported. For 100 kilograms of fattened hogs exported, the corresponding import was 333 kilograms of corn. Other exports similarly treated were fattened sheep, fresh beef, split carcasses of hogs, other hog meat, fresh mutton, bacon, lard, dead fowl, fresh (also living) fish and salami.⁵⁴

The Swedish and Polish tendency is to refer to these instruments as export certificates,⁵⁵ while the tendency in the other countries is to refer to them as import certificates.⁵⁶ It might be helpful if they were called export-import certificates, the exportation having by necessity to precede the importation. The term import-export certificates might by the same token be applied to the French acquits-a-caution, or surety releases. The French plan works, so to speak, in the active voice, the final action being a departure of the foreign goods out of France.

The plan of the eight countries⁵⁷ on the other hand, works in the passive voice, the final action being the reception of previously external goods, whether goods of foreign growth or goods being reimported back into the certifying country. The active theory is illustrated in countries having arrangements for manufacturing and warehousing in bond and for

⁵⁴ The certificates were valid for 120 days from date of issue but in no case after October 31, 1929.

For detailed information as to the Hungarian application of such certificates the writer is indebted to the Division of Foreign Tariffs, Bureau of Foreign and Domestic Commerce, U. S. Department of Commerce.

⁵⁵ Export certificates in the parlance of the United States customs service have a meaning quite apart from the type of reimportation privileges discussed in this paper. They certify as to country of origin. This may be a basis for avoiding fumigation fees in case of identical reimportation of products requiring such treatment.

⁵⁶ The activity principle is not lost even when drawback due-bills are made receivable on further imports. Drawback debentures were issued in the United States until about 1910, and if their issue were continued would still be receivable in satisfaction of import duties on any merchandise (Revised Statutes, Section 3048). Export debentures, such as the amendment to H. R. 2667 contemplates, involve the opposite principle, that of passivity.

⁵⁷ Austria, Czechoslovakia, Germany, Hungary, Latvia, Poland, Russia, and Sweden.

drawing back the duties paid on foreign goods sent on through to export.⁵⁸ The active theory is illustrated further in a supplementary feature of the Swedish arrangement. This provides that if the receiver of a certificate wishes to present it for redemption in cash, he may have it so redeemed, if the intake of the Treasury from import duties on imported products of these kinds has been sufficient during the preceding six months to keep it in funds for this particular purpose.⁵⁹

The number of agricultural items specified for certificate export is as follows: Austria, 5; Czechoslovakia, 18; Germany, 19; Latvia, 6; Poland, 12; and Sweden, 4.

For the most part the rates are higher on the German schedule than on the schedules of other countries. In the case of wheat, for example, the premium rates in cents per bushel on the exchange basis of December 16, 1929, were as follows: Austria, 11.0; Czechoslovakia, 24.2; Germany, 42.1; Poland, 18.3; and Sweden, 27.2. This and similar information for other products subject to premiums treatment is included in the accompanying table. Latvia adopted the export-import certificate plan after the date selected for the computations.

Time limits are always established for the completion of the movement. A period of a few months suffices.⁶⁰ The more goods for which replacement entry may be obtained by use of the export-import certificates and the more closely the seasonal curve of these replacement goods corresponds to the seasonal curve of the outgoing goods, or, in other words, the better the assurance that demand for such certificates, season by season, will surpass the current offerings, the shorter the period may safely be and the more certain that the market value of such certificates can fall below their face value by no more than what a somewhat vigorous German writer calls an infinitesimal discount.

⁵⁸ In the United States, excess drawbacks are disavowed and only 99 per cent of the duties paid are recoverable.

⁵⁹ A similar feature is in H. R. 2667 as amended.

⁶⁰ Where temporary admission under the active principle is involved, "the period within which goods may be re-exported should be as long as possible. It should be calculated in accordance with the circumstances and the nature of the traffic and should be capable of being extended to one year. It should be possible, if necessary to prolong this period even further," (Annex C, Preparatory Documents, Economic Committee, International Conference on Customs Formalities, Geneva, October 15, 1923.) Relative to the improvement trade and the procedure for verifying re-imported goods, etc., the committee offered a similar recommendation as to length of period. Where identity rather than equivalence is required, such longer periods are in order.

On the matter of discounts it has been pointed out in connection with the Czechoslovakian system that since the demand for import certificates by far exceeds the supply, the prices paid for them are only slightly below their face value, the usual discount not exceeding one or at most two per cent.⁶¹

It is within the bounds of reason to say that a discount in excess of two per cent in any of the five countries would be given attention.

In the case of the export-import certificate plans, the replacement is made with imports brought in after the outgoing goods have been exported with benefit of this privilege. This privilege is as valuable as a cash bounty, particularly where the certificates are assignable, as is generally the case.⁶¹ Exporters can deduct the amount per unit of product from their unit export handling margins, just as, in the opposite case of an export duty the export handling margins have to be increased. Such modifications in the handling margins of exporters have been clearly reflected in correspondingly higher or lower prices in the local originating points for export shipments. One of the principal advantages of the method lies in the fact that the system is in a position to regulate the domestic price level of products in international trade, particularly to check sharp price movements by facilitating the export of surplus supply against the issue of certificates.

It is a significant fact that so many European countries have had certificate bounties without the filing of protests from other countries. About the time of our Civil War a Belgian protest was made against the French plan, but certificates on the German plan have been the occasion for no formal objections by foreign governments. A motion of objection reported to the British House of Commons, October 30, 1929, failed to pass.⁶²

It is not difficult to generalize the legal theory of export-import certificates. The authorities of country A say to the international trader, "Take out certain goods and you may replace them with certain other goods that under most cir-

⁶¹ Broft, Alois, Grain Import Certificate System in Czechoslovakia, Economic and Trade Note 29, August 13, 1928.

⁶² See footnote 8 for reference to the Belgian protest and footnote 34 for reference to a discussion of recent British attitude toward export premiums paid by other countries.

cumstances are dutiable, but in your case, because of the evidence of your having exported certain goods, that which you bring in is importable by you or on your order with waiver of duty up to a stipulated amount." Such temporary exit from country A involves anticipated readmission either of the product itself or of a substitute.

Let us suppose that the products readmitted or re-entered are the identical units exported or are an identical amount of products of the same species. In that event we have what may be called identical readmission. In addition there are two kinds of readmission equivalence. On the one hand, let us suppose that on the exit of wheat or wheat products duty-waived entry is provided for some other agricultural product, not wheat. This we can call equivalent readmission of the first degree. We can apply the phrase equivalent readmission of the second degree where the export of wheat or wheat flour results in the duty-waived entry of exotic farm products, such as those from tropical countries, or forest or mineral products, raw or transformed, or manufactures, regardless of how exotic or how strictly agricultural the basic materials may have been.

Export bounties in cash are seldom paid on agricultural commodities in modern Europe. The Finnish cash bounty of \$0.028 per pound on exported eggs and exported pork, in effect in 1928, is a solitary example.⁶³

Centralized Agencies Supplement Customs Arrangements

Farm relief measures by which in export or demi-export countries export duties on agricultural products are reduced or abandoned, or export premiums established or increased or by which in demi-export and import countries import duties are established or increased may be operated with or without central boards, corporations or syndicates to supplement them. Where reliance is had upon barriers erected or assistances afforded at the frontier and other ports of a country, where all comers regardless of the size of shipments so long as above certain administrative minimums, find their goods receiving the same unit treatment, the policy may be said to be one of non-centralization. In some

⁶³ For export bounties in cash paid by England, Scotland, etc., in other periods see Hannay, A.M., Government Control of Export and Import in Foreign Countries, Bureau of Agricultural Economics, U. S. Department of Agriculture.

cases there has been a tendency to accompany provisions for non-centralized policies with some arrangements for centralized action. There has been less of this tendency in the case of import duties than of export premiums.⁶⁴

The Polish plan for export-import certificates is accompanied by provision for the formation of an export syndicate for business in grain exports. This export syndicate has also the work of standardizing grain, as export bounties will only be paid for grain conforming to certain standards.⁶⁵ Export business in the case of Poland is being attempted mainly in Scandinavian countries. Negotiations have been under way between the Polish syndicate and the biggest German flour milling concern (Scheuer-Gruppe) for the purpose of making an agreement with respect to the export policy of both groups. A similar syndicate to that in Poland is projected in Germany, the plan being that both syndicates will endeavor to cooperate on the export market.⁶⁶

In Sweden, likewise, the inauguration of the system of export bounties by means of import certificates was accompanied by a definite effort to organize a national cooperative wheat pool to regulate the marketing of wheat in accordance with the demands of millers.⁶⁷ The plan provided for the establishment of a wheat selling organization in each important producing province. The individual farmer members of the provincial associations agreed to deliver their entire surplus to the local organizations. The plan called for payment to all members on the basis of the average price obtained during the entire selling season. It was planned that the provincial organizations should make all sales through the national association. The plan was proposed on the assumption that as soon as sufficient members are enrolled to control the sale of at least one-half of the Swedish wheat crop it would go into effect. Dealings the first year were confined to wheat. The sale of rye was planned to be handled by the association on a commission basis without any obligation to make complete deliveries.

⁶⁴ The fact that over 90 per cent of the British hop acreage was reported in 1925 to be controlled by a growers' cooperative association seems to be a fact quite independent of the imposition of the import duty on hops shortly before.

⁶⁵ The seat of this syndicate has been established at Posen in view of the fact that the grain export trade has long been handled through that city.

⁶⁶ Report by L. V. Steere, U. S. Department of Agriculture, November 17, 1929.

⁶⁷ Foreign Crops and Markets, August 9, 1926.

**EXPORT-IMPORT CERTIFICATE PLANS IN EFFECT AND RATES IMPOSED THEREUNDER BY
FIVE EUROPEAN COUNTRIES EFFECTIVE DECEMBER 16, 1929.**

PLANS

	<i>Austria</i>	<i>Czechoslovakia</i>	<i>Germany</i>	<i>Poland</i>	<i>Sweden</i>
Date of law or decree	Sept. 27, 1929	June 22, 1926	Sept. 3, 1925	Sept. 15, 1924	July 26, 1926
Date premiums are effective	Sept. 27, 1929	Aug. 1, 1926	Oct. 1, 1925	Nov. 16, 1929	Aug. 1, 1926
Ministerial branches concerned with control	Finance; Commerce; agriculture	Finance; Industry and Trade; agriculture	Finance (Agreement of Reichstag)	Finance, Commerce and Ind. Agriculture	Director General of Customs
Maximum number of months certificates are valid	Nine	Nine	Nine	Nine	Six
Negotiability	None	Full	Full	Full	Full
Interchangeability among agricultural commodities	None	Partial	Complete	Complete	Complete
Rate of exchange, U. S. money, Dec. 16, 1929	1 crown = \$0.2026	1 crown = \$0.0297 ²	1 mark = \$0.2382	1 zloty = \$0.1120	1 crown = \$0.2698

EXPORT PREMIUMS RATES IN U. S. MONEY

	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>
<i>Cereals (per bus.)</i>					
Wheat	11.02	24.22	42.14	18.29 ³	27.17
Rye	10.28	28.64	36.30	17.07 ³	25.36
Oats	20.95	15.50	20.74	6.50 ³	—
Barley, feed	8.81	—	10.38 ⁴	9.72 ³	—
Barley, other	8.81	—	25.93	9.72 ³	—
Corn, feeding	—	*	*	—	—
Burra	—	—	*	—	—
Spelt	—	—	28.09	—	—
Buckwheat	—	—	25.93	—	—
Millet	—	* *	—	—	—
<i>Cereals (per 100 lbs.)</i>					
Rice	—	*	—	142.20	—
<i>Cereal Products (per 100 lbs.)</i>					
Flour, wheat	—	94.20	156.67	45.72	79.56
Flour, rye	—	94.20	156.67	45.72	79.56
Flour, legume	—	—	202.58	45.72	—
Flour, feeding	—	94.20	—	—	—
Flour, other	—	94.20	—	—	—
Malt	—	—	—	45.72 ³	—
Rice products	—	—	—	83.81	—
Shelled	—	—	—	—	—
Other	—	—	—	—	—
Grits, groats, barley (per 100 lbs.)	—	94.20	—	45.72 ³	—
Other mill products	—	94.20	—	—	—
<i>Legumes (per 100 lbs.)</i>					
Beans, feed	—	12.11	27.01	—	—
Beans, edible	—	12.11	25.93	—	—
Lentils	—	12.11	43.22	—	—
Lupines	—	—	27.01	—	—
Pens	—	12.11	43.22	—	—
Vetch	—	8.06	27.01	—	—
<i>Animal products (per 100 lbs.)</i>					
Bacon	—	—	—	76.20 ³	—
Butter (natural)	—	—	—	101.60	—
Fat, goose	—	201.87	—	—	—
Hams	—	—	291.76 ³	76.20 ³	—
Lard	—	201.87	—	—	—
Pork	—	215.32	226.88 ³	—	—
Sausage	—	471.00	756.33	—	—
<i>Animals, live</i>					
Cattle, per head	70.32	—	—	—	—
Hogs, per 100 lbs.	—	—	172.88	—	—

¹ Pounds per bushel: wheat, 60; rye and corn, 56; barley, 48; buckwheat, 38; and oats, 32.

² At par 1 Czechoslovak crown equals \$0.2026. The other exchange rates are practically par.

³ Certificates on flour and milling products can be used to cancel duties on millet also.

⁴ After December 31, 1929, according to announcement, this rate will be changed to the rate prevailing now for other barley.

⁵ German import duty per 100 pounds; pork, \$4.86; hams, \$6.48.

⁶ Polish import duty, cents per bu.: wheat 33.52; rye 18.40; oats 17.88; barley 26.82; dollars per 100 lbs. of barley groats, \$0.91; malt \$0.49; bacon \$2.03; hams \$5.08.

Where cooperative or other types of corporations are used to supplement export-import certificates, and where these are issued at rates less than or equal to the import duties a three-ply policy results.

Import duties may be supplemented by dynamic measures of other sorts, as in Italy, where the grain campaigns have government support extending from the personality of the premier, on through a considerable variety of subventions and other stimuli.

Conclusion

One striking instance of almost complete exemption from what might otherwise be very heavy land taxes stands out clearly. Clearly, import duties have afforded the bulwark behind much of the farm relief activity that has been carried on. Alleviations of the protectionist régime, if customs-credit arrangements for making the tariff effective on agricultural exportables, may be properly so-called, have occupied a place of major importance, in this latest period of farm relief effort. Nevertheless, even when the most has been done that any one country has found it possible to do it can hardly be said that any complete or adequate program of policies had been pushed to the point where the industry of agriculture has been placed on an equality with other industries.

There can be little doubt that farm relief measures in Europe constitute a field of study well deserving the closest attention of statesmen, economists and other citizens interested in well-ordered national households and in harmonious international relations.

A FOREIGN AGRICULTURAL INFORMATION SERVICE

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A knowledge of the world situation in regard to acreage sown, crop conditions, harvest yields, stocks, numbers and kinds of livestock, and prices together with present and prospective demands are essential factors in rendering an adequate outlook service to American agriculture. Even though only twelve per cent, roughly speaking, of the total agricultural production of this country enters into foreign trade, it is an accepted thesis that the prices received for the greater portion of the entire output are directly or indirectly influenced by foreign competitive conditions.

The creation of machinery which will supply in an adequate manner information on the production, competition, and demand status throughout the world of certain designated agricultural commodities is a problem now receiving the serious consideration of the Government. But it is not a new problem. Thirty years ago David Lubin, a California merchant was wrestling, in no insignificant manner, with the same question. An analysis of Lubin's plans together with an appraisal of the results of the efforts of the organization which he helped to establish, furnish some significant pointers to those interested in setting up improved machinery for collecting agricultural information in foreign countries.

In the nineties Lubin toured North America and Europe in search of an economist who could prove to him that a tariff on agricultural commodities protected the growers in a country which produced those commodities in excess of domestic requirements. During these journeys, this California Diogenes, through persistent cross-examination of learned professors and others was introduced to the accepted theory that prices of most commodities depend in a large measure

Paper read at the 20th annual meeting of the American Farm Economic Association, at Washington, December, 1929.

upon what many people designate by the indefinite term "supply and demand." Lubin found upon investigation supplemented with no small amount of economic reasoning, that, the demand for a commodity such as wheat was fairly well known from past experience. It did not undergo violent changes within short periods. But supply—ah! that was a different story.

It was difficult, indeed, to know the supply. Supply was that quantity offered for sale, plus that quantity which buyers and sellers thought existed and was potentially available for sale, plus the quantity which buyers and sellers thought the growing crops would make available for sale within the near future. Hence supply was evidently composed of a goodly element of what people thought. The less information there was upon stocks, acreage sown, and the condition of the crop in all parts of the world, the more guess there was in the forces setting the price of wheat. Unfortunately, the farmers growing the wheat had little or no information, hence their operations were based largely upon guess. Furthermore, the most complete information on the actual and potential supply was privately collected by a few large operators and used, of course, to meet their own needs.

Hence it was no radical departure for Lubin to conclude that the farmers of a nation should have a more reliable basis for planning their sowing and breeding enterprises than that furnished by custom or unadulterated chance. The logical conclusion was that the concentration of the knowledge of world crop and market conditions in the hands of a few dealers was not a good thing for agriculture. Furthermore, existing machinery for collecting this price influencing information was faulty and incomplete. The information itself was unreliable. It should be extended in scope and improved in accuracy. Above all, its vital connection with the welfare of all mankind demanded that it be public property.

Farmers sowed and reaped, bred and slaughtered, with small conception as to the needs of the market or the actual and potential supplies available to fill these needs. Hence it was obvious that the interests of agriculture required a central clearing house for information pertaining to the

world's agricultural activities. This was the prime requisite, the pressing need that overshadowed all others. To this end, Lubin proposed the creation of a world Chamber of Agriculture. This proposal, actively sponsored by the King of Italy, led to the founding of the International Institute of Agriculture in 1905.

The original idea underlying the founding of the International Institute of Agriculture was that it should render a foreign agricultural information service for all nations. It was to be current information—the kind that dealt with the present. Lubin wanted statistics that were of sufficient vitality to influence prices. He was not deeply concerned in those that explained a year later the why of prices.

The Institute has failed in a large measure to fulfill the hopes of its founders and early supporters. This is due to a variety of reasons. The trailbreakers had an exaggerated notion of the power of statistics. They overemphasized the importance of crop releases by the Institute. The world has not awaited with bated breath for its figures. It may be argued that this is because the Institute has not furnished data which merits breathless anxiety. But it is doubtful if an international institution can cover a commodity with sufficient accuracy and thoroughness and with the necessary speed to overshadow the effects of private information services and the Government reports of the principal producing countries. At the same time, Lubin and his followers failed to appreciate the incompleteness of existing agricultural statistics, their lack of uniformity, and the apathy of governments toward their improvement. On the other hand, it is certain that the Permanent Committee, the governing body of the Institute, has failed to accept the opportunity provided by the Convention to develop, extend, and improve the accuracy of world agricultural statistics. It is well, perhaps, to give more detailed attention to some of these shortcomings.

The idea of an official international statistical agency was heartily endorsed by two of the world's largest grain exchanges—the Liverpool Corn Trade Association, and the Chicago Board of Trade. To them it gave promise of a steadying influence upon prices. But Lubin saw in this

agency far more than a price stabilizer. It was his sincere belief that this agency would sound the death-knell of trusts dealing in agricultural products and relegate the speculator to the poorhouse. His business in agricultural products, at any rate, would cease to be profitable. Corners would become a thing of the past, for every clerk would have access to information which, when in the hands of one or a few individuals, made corners profitable.

In writing to Mr. Moberly Bell, editor of the *London Times*, Mr. Lubin expounded his philosophy regarding the fate of the manipulator. To quote in part from this letter: "Who are the manipulators? Individuals or cliques who know or pretend they know the quantity of the supply. What if this information of theirs was rendered untenable, if this information were supplied by a body as authoritative as the trusted delegates of forty nations, aided by competent assistants? In that event, the 'trump-cards', the stock-in-trade, the magic-wand of the manipulator would be rendered useless."¹

The dramatic setting surrounding the release of cotton estimates by the United States Department of Agriculture made a deep impression on Lubin. He said: "Today at 12 sharp, I was present when the crop figures were given out, and the sight was dramatic. An eager crowd of telegraphers were on the line with outstretched arms, ready to grasp the papers containing the summaries, and the instant they clutched the papers they were at the telegraph keys. What will not that sight be when the world's totals are given out to all parts of the world?"²

But those expecting the Institute to multiply or even to duplicate the importance of cotton estimate releases in the United States overlooked some very important considerations. The United States produces roughly two-thirds of the world's supply of cotton. Crop conditions and harvest yields in that country markedly influence the world price. The statistical machinery for reporting the cotton crop is, with all its faults, the most highly developed in existence.

Larger amounts are expended in reporting the cotton crop

¹ Letter of June 19, 1907. *David Lubin Archives*, Part IV, Vol. 5.

² Letter from Lubin to Count Faina. *David Lubin Archives*, Part I, Vol. 6.

within the United States than the Institute expends upon reporting the world's total agricultural production. It is safe to conclude that no single staple crop has so large a proportion of the total supply under official statistical observation as is the case with cotton in the United States. Hence the eagerness of the cotton world for the official releases. In contrast, the United States reports on sugar beet acreage and crop conditions, but the world sugar producers and refiners are not greatly exercised over these reports. No telegrapher sits poised to flash the news the instant it is released. The reason is obvious: The North American sugar-beet production has little effect upon the price of sugar. It is an insignificant portion of the world's supply. The inference is clear: Unless the Institute be the sole authoritative source for information on a large portion of the production of single crops, it can never hope to assume the dramatic rôle played by the United States government in the release of its cotton estimates. It is not implied that the Institute does not perform a distinct service in compiling and publishing the reports of adhering governments. It does, but unfortunately, the very fact that others must analyse and interpret the data with a view to improving their accuracy deprives the Institute of its "fountain head" character upon which its promoters built.

The cotton scandal of 1905 in the United States occurred during the time when Lubin was energetically campaigning for his world clearing-house. The scandal was caused by a leak in the Government's crop report. It was rumored that one of the functionaries connected with the preparation of the reports received \$75,000 for the premature disclosure of the figures. The eagerness with which the figures were sought and the lengths that some would go to secure them before they were made public impressed Lubin. He wanted the Institute to deal in data that someone wanted to steal. In promoting the idea of a world clearing-house for agricultural statistics, doubting Thomases were prone to drag in the cotton scandal as evidence of its unworthiness. The manner in which the scandal was turned to favorable account is shown by the following extract in a letter from Lubin to the Director of the Census Bureau at Washington: "Do you re-

member at the meeting in Berlin, when Prof. Ruhland and his friends pointed out that there was sometimes dishonesty in the United States Department of Agriculture (pointing to the Cotton scandal)? I told him that I was very glad that there was a cotton scandal; that it indicated that the Department had figures so valuable as to tempt thieves to steal them and get \$75,000 for a theft, that I defied him to show me any statistical figures of the German Empire from its Department of Agriculture that a thief could get even 75,000 pfennigs for."³

The above argument, however, overlooks the possibility that the Institute reports would include those of governments, even though such reports were not worth stealing. But Lubin did not foresee, nor could he be expected to foresee the situation which places the Institute in the position of relying solely upon routine government reports. In his estimation the Institute should have some sort of a reporting body of its own.

Upon one thing Lubin was certain, the information was to be authentic and it was to be timely. In one of his letters he rejects the usual idea of a statistical machine: "And does this mean a mere statistic bureau? By no means: It means first of all the systematizing of the foreign consular service so as to have the information reach the Institute in authentic form. It means a system of cable and telegraphic service connecting the Institute with all parts of the world, and of that kind of service which should constantly keep 'the wires hot.' It means that this information should be handled by the world's experts, and summarized by them, and diffused by the Institute at the proper time to the proper places."⁴

As a matter of fact, Lubin was impatient with statistics, as they were usually compiled by government departments, and more impatient of criticism of the usual statisticians.

When the letter of the King advocating the creation of an International Chamber of Agriculture appeared, it was referred to a high statistical officer of this Government for comment. This officer doubted the efficacy of such an or-

³ Letter from Lubin to S. N. D. North, Director of U. S. Census Bureau. March 18, 1908. *David Lubin Archives*, Part IV, Vol. 3.

⁴ Letter from Lubin to Prof. Jerome Vareri, Fed. Italiana dei Consorzi Agrari, dd. 24th. Feb., 1906. *David Lubin Archives*, Part I, Vol. 1.

ganization. Lubin dismissed the comment on the grounds that the statistician was really not to be blamed. He knew no better. "It is my impression," he said, "that the Chief Statistician honestly believes what he says to be true. The real fault is not with the Chief Statistician but with the system under which he finds his opinion. When one, instead of looking for facts in the places where they can be found, looks for them in the 'Red' book, and then verifies the name by the 'Blue' book and by some more books, he is then becoming a specimen of the 'Bureaucratica Misleadania,' and there is about as much economic nutriment in that channel as there is real nutriment in an artificial chicken."⁵

The then Secretary of Agriculture, Wilson, was not attracted either to Lubin or to his schemes and such remarks as the above did not serve to increase his admiration. The attitude of the Secretary was that the United States could secure such information on foreign agricultural conditions as it needed through correspondence and by special agents. In fact, the Department did have one or two agents abroad at the time. Lubin leaves no room for doubt as to his opinion of the special agent scheme. He writes to the Director of the United States Census: "Figures half-heartedly accepted lose the value that 'convention' would give them. So long as our cotton figures are not given out by an authoritative international convention then they serve to but limited purpose, but whenever the same shall be given out by 'convention' they will stick 'steadied.' And so far for cotton, but how is it with breadstuffs? Here we 'walk-around-a-mulberry-bush, with a rantzy-tantzy-tee,' but then, we have a special Foreign Agent, but bless the child, whether it be a Dougherty, or whether it be a Dr. Rutter, these, as you may know, have to stand with hat in hand, at the rear entrance, and with bated breath ask the blessed 'forriner' for any old figures 'layin' around loose,' and if the 'forriner' feels real good he throws out a figure or two, and if he don't, well, some 'figgers' have got to go. But is this a safe way in handling the seven billion dollar annual agricultural production?"⁶

Lubin's burning fear of "the mere heaping up of figures"

⁵ David Lubin Archives, Part I, Vol. 8.

⁶ Letter from Lubin to Dr. North, Director of the U. S. Census. March 18, 1908. David Lubin Archives, Part IV, Vol. 3.

which, when on good paper, are mainly sought after by the "old junk man," and his desire to collect figures that "tempt the thief to steal and the rogue to buy" are indications of the plane upon which he worked. But the degree to which statistical data lend themselves to trust busting, price steadying, and the prevention of speculation was greatly over-estimated. Even had the Institute performed according to expectations, the result would have been disappointing. The impossible was demanded. But, unfortunately, the Institute could not perform according to expectations. The statistics did not exist. In a large measure they are still lacking.

When the Institute began its statistical work in 1910, it was able to report upon seven commodities only, and those inadequately. Its first reports covered only thirty per cent of the wheat acreage. The seven original commodities of 1910 have been increased to 34 in 1928. The whole of the wheat acreage, with the exception of China, is covered. This is progress to be sure, but it must not be assumed that the task approaches completeness. Important categories of products are sadly lacking an adequate statistical service—wool, dairy products, forestry, to mention a few. Not only are the actual figures missing in many instances, but quite as troublesome is the lack of uniformity in existing figures. In the beginning it was quite impossible to issue anything like a dependable world summary on the crop conditions of a single commodity. The Governments simply did not speak in terms that could be translated into a common language. For example, the United States talked about the percentage of normal. Germany estimated her crops by a range of from one to five, and Austria reported her crops as "very good, good, passable, and poor."⁷ Furthermore, some countries refused to estimate crops before the harvest. A good example of this attitude was that voiced by a delegate of France in the General Assembly of the Institute in 1909. He said: "I wish to declare that up to the present the French Government has never cared to assume the very heavy responsibility of the publication of information on the approximate

⁷ Letter from Lubin to Chas. Nagel, Secy. of Commerce and Labor, July 27, 1909. *David Lubin Archives*. Part IV, Vol. 12.

valuation of the probable yield of crops, and I do not think it will wish to do so in the future. I make reserves on this subject, therefore, in the name of my Government."^a The French position is much the same today as it was in 1909.

From the beginning the Permanent Committee adopted the policy of using official figures only in its statistical work. This policy has been adhered to with the exception of price quotations. In placing its sole dependence upon government sources, the Institute greatly limited its field for service. It cannot question the accuracy of data furnished by adhering Governments. It has no choice but to accept and issue the reports furnished.

There are certain evidences which tend to indicate that some of the deficit producing countries tend to over-estimate their production and underestimate their probable requirements with a view to minimizing probable imports. It may be that such practices react favorably upon the exchange situation. It would seem, however, as if these tendencies would correct themselves in time, for the reason that inaccuracies in crop reports react to the detriment of a country's own people. One may concede that it might be to the temporary advantage of a country to mislead other nations, if at the same time it did not mislead its own inhabitants—an impossible undertaking. Much of the objection now raised against foreign crop reports come not from willful falsification, but rather from an incomplete and faulty system based upon backward methods and scanty budgets. It is felt that most of the Governments are desirous of arriving at the truth, but many of them have not yet developed the machinery for doing so.

Since the Institute always has depended upon and must continue in a large measure to depend upon government statistics, its greatest opportunity for service is that of extending the scope and improving the accuracy of the agricultural statistical compilations of adhering Governments. The Institute's service in this field can never be more accurate and more extensive than the services of the agencies which supply the data. As an international organization having official connections with practically all the Governments of

^a Actes de l'Assemblée Generale, 1909, p. 193.

the world, it is truly within its competence to urge uniformity of methods and extensions of scope upon Governments in the conduct of their agricultural statistical work. Moreover, this is a type of service that can only be performed by an international official body such as the Institute. One Government cannot well say to another Government "your statistical reports are faulty and for that reason a change is advisable." But the Institute is in position to say this very thing. Hence here is a distinct international service that can be performed by nations cooperating through the Institute, which cannot be accomplished so readily by separate action. Yet the governing body of the Institute has not embraced its peculiar advantages in this respect.

For example, the periodic census—an actual enumeration—is the basis for crop and livestock estimates. Many countries do not take such a census, and there is little or no uniformity in the methods and terminology of those that do. Yet it was not until 1925 that the Institute undertook to remedy this fundamental defect and then only at the proposal of the American Delegate who was instrumental in securing outside funds with which to promote the movement.

That there has been progress in improving the accuracy and extending the scope of agricultural statistics during the past twenty years none will deny. But there is reason to believe that the accomplishments are meager in comparison with the possibilities. Impartial observation leads one to believe that the Economic Section of the League of Nations has done more toward extending and unifying commercial and industrial statistics during its eight years of existence than the Institute has done for agricultural statistics during its twenty years.

The League of Nations has the machinery and is in position to work with Governments with a view to inducing them to extend the scope and improve the accuracy of their agricultural statistical services. It is also in position to undertake economic studies dealing with international agricultural problems. But the League is handicapped in developing this work by the opposition from Rome. Although agricultural leaders and their Governments have repeatedly signified a desire that the League concern itself with the eco-

nomie problems of agriculture, the Italian Government has opposed action on the part of the League designed to comply with these requests. Since Italy is a permanent member of the Council of the League, it is not to be expected that the League will attempt to serve agriculture at the expense of incurring the lasting displeasure of one of its important member Governments.

One of the most hopeful steps toward the unification of international statistics was the International Conference Relating to Economic Statistics held by the League in Geneva, November 26 to December 14, 1928. This conference was attended by representatives of forty-two nations. It formulated a convention which is now before Governments for ratification. A number of the sections of this convention deal specifically with the unification of agricultural data.

Few of the agricultural proposals are obligatory upon the contracting powers. Nevertheless, their inclusion in the Treaty implies the assumption of a strong moral obligation on the part of adhering nations to give affect to them. It is regrettable that the United States has not seen fit to ratify this treaty.

The point to be emphasized is that while no international organization can be depended upon for anything approaching an adequate information service in the field of agriculture, real progress is being made in the extension and unification of international statistics relating to the industry. It is safe to say that more progress has been made during the past five years than during any preceding decade. The World Agricultural Census and the International Economic Statistical Conferences are encouraging signs. But experience indicates that international organizations will never be in a position to supply an adequate service for national production programs or for estimating prospective price levels. On the other hand, their work will be of increasing value to the national organization undertaking this task.

The Bureau of Agricultural Economics has not been unmindful of the deficiencies in the information now available on production, competition, and demand in foreign countries of important agricultural commodities produced commercially in the United States. The Bureau has long realized

that the more meager and fragmentary the material, the more essential that it be supplemented and interpreted by trained observers abroad. But funds have been lacking for the maintenance in foreign countries of experienced crop and livestock estimators. It has not been possible to put in the field those qualified to measure competitive forces and to ascertain the probable demand. Furthermore, the legal status of such an undertaking has been far from satisfactory. But a new factor has appeared; a new agency has entered upon the scene. I refer to the Agricultural Marketing Act and its executive body the Federal Farm Board. The commodity loan activities of this new organization make it imperative that the Board be informed, not only upon existing price levels, but that it have a fairly accurate idea of prospective price trends. In other words, the members of the Federal Farm Board feel that they must be in position to appraise, within reasonable limits, the world situation with respect to those commodities upon which the Board is asked to advance in the form of a loan, a goodly percentage of the current market value. In order to make such appraisals the Board is in urgent need of more accurate and more extensive information upon world conditions. With a view to securing such information, the Board has formally requested the Secretary of Agriculture to establish within the Department of Agriculture a Division of Foreign Agricultural Information Service. The plans are to work in close cooperation with the Departments of State and Commerce. It is expected that the Consular Service of the State Department and the foreign representatives of the Department of Commerce will play important parts in contributing to this new service.

Legislation designed to give a definite legal status to this foreign activity by the Department of Agriculture has three times passed the House of Representatives within the past five years. It has been reported upon favorably an equal number of times by the Committee on Agriculture and Forestry of the Senate. Similar legislation is now pending. It has the approval of the Secretary of Agriculture, the Secretary of Commerce, and the Federal Farm Board. It is hoped that this legislation may be accorded early and favorable action by Congress.

THE AGRICULTURAL TARIFF OF 1922 AND A LOOK AHEAD

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With the collapse of agricultural prices in 1920, it was inevitable that the farmers should turn to the tariff as a means of relief. It was inevitable because of the belief that we were already at the turning of the ways with respect to the balance of imports against exports. The farmers had been told that the period of surplus production was past, and that in the near future there was to be a shortage of farm products in America. Exports of agricultural products had indeed been falling off for some years before the War, and it was easy to calculate, on the basis of this apparent gain of consumption over production, at what future time we would be, for one important product after another, on a permanent import basis. This sort of doctrine and prophesy had gained such a vogue as to impress itself on many farmers and their friends. Hence, the renewed faith in the tariff as a savior of the agricultural situation following the cessation of hostilities in November, 1918. It is true that there was more than a tendency for agricultural products to make their way to American ports, as from time to time the buying power of foreign countries slackened. In 1919 and 1920, we imported appreciable quantities of agricultural products, including considerable consignments of dairy products, eggs, wool, beef, mutton, vegetable oils, wheat and sundry fruits—all of which articles compete with our home grown products. Of course, sugar also is imported in quantity, but the competition is on a different basis, since the bulk of our supplies is regularly produced outside the country.

This unusual invasion of our ports by such quantities of goods from abroad was indeed a circumstance to attract attention. When, in the summer of 1920, our food stuff prices went over a precipice and fell like a plummet, it was inescapable that the blame should be laid at the door of the political party which had so suavely, and so characteristic-

ally, put the farmers' produce on the free list, or granted inadequate protection. It was believed that the manufacturers, who also owe the same party scant thanks for protective measures, were nevertheless, taken care of much better than was the farmer. This sentiment insured the triumph of the protectionist party in 1920, and gave the farmers an easy opportunity to write their own schedules into the tariff acts of 1921 and 1922. The effects of the new tariffs were with very few exceptions distinctly disappointing.

Looking over the schedules and taking into account the question of international trade—i.e., whether we are exporting, importing, or just living on our own, it appears that on but 2.50 per cent of agricultural produce are the duties fully effective. However, on approximately 34 per cent more the duties are partially effective. This partial effect may, and does, range anywhere from a small and doubtful amount, as on hard spring wheat, during the past three or four years, to a positive and fairly persistent degree of protection, as in the case with butter. Thus the tariff on one third of the produce of our farms is effective, either persistently, and generally, or intermittently, and perhaps locally but at best to a rather small extent, and with distinctly doubtful benefit, since it is likely to act as an unstabilizing force respecting price, and since many schedules fail surely and frequently as do those relating to wheat, mutton and eggs, on many occasions, to act at all. We will now notice more specifically some half dozen of the leading instances of the 1922 tariff results.

The Tariff on Wheat. This schedule is a doubtful one, depending mainly on the weather. When the rainfall is normal in the spring wheat district, the effect of the wheat tariff is theoretical, and unimportant. When the rainfall is scant, and the wheat yield short, the tariff may be distinctly effective, though not to the full extent of the 42-cent tariff, unless the case becomes more acute than has thus far occurred. It requires a liberal dealing with the facts to estimate a gain of \$17,500,000 in receipts for wheat, one year with another, due to the tariff. This figure may easily be twice too high.

The Tariff on Dairy Products. The immediate benefit to

farmers, derived from the tariff on dairy products, would seem to be about \$100,000,000 on butter, and perhaps—a very doubtful figure—\$50,000,000 on other dairy products, making a total advantage to dairymen of about \$150,000,000. This would be roughly \$40 each per annum, for the dairy producers of the United States. With the present low prices of butter the tariff is of little immediate effect.

Cattle and Beef. The duties on cattle and beef have been fairly effective for a few years past. This is because of a smaller production of cattle during the past few years and a consequent smaller supply of beef. The Canadians, Australians and Argentinians stand ready to provide us with an added amount of beef whenever we will offer for it anything above the world price. We have done this to a small extent during the last few years, with a resulting importation of some two per cent of our beef supply. During the preceding years of free trade in cattle and beef, we imported around four per cent of the amount used. The effect of the Fordney-McCumber tariff on beef importations was one of the clearest cut of the effects of that act. On the other hand, it must be noticed that we were on the upward swing of beef prices, due to a scarcity of cattle, which regularly recurring cattle cycles bring at intervals of some twelve or fourteen years.

The gain to farmers from the 1922 beef and cattle schedules have been rather diversely estimated. Our Wisconsin studies have been made on the Adam Smith assumption of a nation-wide market, which may or may not accord with the facts. However, on this assumption, the cattle producers are getting a benefit of \$270,000,000 a year, or an average of \$147 per cattle-producing farm. This estimate is no doubt somewhat over liberal, since it is doubtful that the effect of the tariff is uniformly effective in all places at all times.

While the tariff on beef appears to be effective, and while at the same time there seems to be good reason to think that a somewhat higher tariff will probably be effective, it must not be forgotten that beef is a semi-luxury. Whenever the pay of the laborer slackens, there is a falling off in the demand for beef, and a stronger demand for pork, and for cheaper foods. This points to the undoubted fact that for

the present, and the near future, beef cannot be forced to appreciably higher levels by increasing the tariff. The buying public will refuse to buy.

The effect of the tariffs on pork, eggs, corn, oats and barley, and a large number of minor products is either nothing at all, or of such slight proportions as to be negligible. At the same time, there is much popular enthusiasm for increased tariffs on many of these commodities—e.g., corn and eggs. A tariff on corn makes it possible for the farmers of the corn belt to keep a firmer hold on the markets for corn along both the Atlantic and the Pacific coasts. Just what this will, or might, amount to is not very clear. The overland rail haul from Kansas or Nebraska to the Pacific coast is so great that the California poultry producers will hesitate to put much corn into the feeding mixtures should they be required to buy it from these sources at times when it is selling locally at a reasonable figure, such as 60 cents a bushel. The tariff may easily shut out the corn from Argentina without creating an appreciable increase in the demand for our own product. The very small amount of corn sold outside the neighborhood in which it is grown, together with the concomitant fact that the price of corn is made at home instead of in a world market, as with wheat or cotton, gives the corn tariff a very different aspect from that on many other products. A prohibitive tariff on corn would, no doubt, raise the price a trifle within certain localities, but while we continue to export from four to forty times as much as we import, the added income due to tariff on corn will be mainly psychic.

Eggs. The tariff on eggs is attracting a good deal of attention among poultrymen. Under the tariff of 1922 we continue to import a few million dozen eggs from China. Most of these are low grade eggs, and do not compete, therefore, keenly with our high grade eggs. Under an adaptation of Gresham's law, they may tend to drive the good eggs out of the country. The increased rates of the present tariff act shut out considerable quantities of eggs, though we still import between one and two per cent of our egg supply. Three disconcerting facts confront the enthusiast for more tariff on eggs. First, importation of eggs is nearly balanced

by exportation. Secondly, the quantity of eggs equivalent to the entire imports could all be eaten in a single day. Thirdly, the Tariff Commission has not yet determined the cost of producing eggs in China, so we have no means of knowing what the tariff rate on eggs should be, and worse yet, no means of finding out.

Sugar. The contest over the sugar tariff is one of the severest and bitterest. Sugar tariffs for many years have been instrumental in creating animosities among friends; belligerents among neutrals; and even in establishing protective coloring among Democrats to such a degree that they can go unnoticed and unharmed among dyed-in-the-wool Republicans. We have had sugar tariffs for a long time, virtually as long as we have had tariffs at all. There is no tariff which works more certainly and surely than that on sugar. Our present tariff, the equivalent of 1.89 cents per pound, refined, is fully effective, and increases the cost of every pound of sugar sold in the country by that amount, plus a greater or smaller addition. Probably sugar costs the consumer about 2.3 cents per pound more than it would cost were it on the free list.

The census reports 146,000 farmers producing sugar crops and, on this basis, these few farmers, about two and a third per cent of all farmers, receive a real benefit in the way of higher prices. One should, however, hasten to explain that we do not really have any such number of farm people in any important sense dependent upon sugar crops as a basis of their income. This is the figure given by the census, but it includes many who produce nothing more than a few gallons of molasses, sorghum, or maple sugar. Even so, the farm value of the entire sugar crops, including sorghum and sugar cane for molasses, is about \$100,000,000, from which consideration it is by no means impossible that the farmers get the bulk of the \$43,000,000, the sum by which the sugar output appears to be augmented by the tariff. It may be that some part of this amount is absorbed by the refiners and manufacturers.

The Government receives \$135,000,000 per year in sugar duties, making a so-called benefit to farmers and Government together of \$178,000,000, while the consumers pay additional charges of \$289,000,000.

From the standpoint of federal revenues, the sugar tariff is one of the worst, since it approaches a per capita incidence. There would be an outcry such as is heard but once in a century should the federal government pass a poll tax act demanding two dollars a year from every man, woman, and child in the country, yet that is about what our sugar tariff amounts to, both in character and in revenue. The sugar duty passes under the name of protection, and the protection reaches fewer than one farmer in twenty-five, and affords this small group an income about one-third as great as the revenue which the government collects. It is, then, a revenue measure much more than a protective measure. "Page" Congress and ask whether or not the recent reduction of the income tax relieves the "common people" as much as would a repeal of the sugar tariff. But, of course, repealing the sugar tariff is unthinkable. Even so, we could pension all of our beet sugar people, both manufacturer and farmer for much less than we are now contributing, directly and indirectly to their welfare. We could go so far as to buy and junk the beet sugar factories of the country, and send an annual check equal to the receipts from beets and cane to all sugar farmers, and still have money left in our pockets out of the sugar tariff charges of the present day. And, although the sugar tariff of 1922 has worked to the full, it is now claimed, first that the tariff is not high enough, and secondly that it is nullified by the admission of sugar free from our island possessions. The claim that the tariff of 1922 is not high enough from the standpoint of the producer is in line with the usual report from interested parties. The real difficulty lies in the fact that the price of sugar has been lower during the past four or five years than it was for a few years preceding. The American producer wants protection against the cheap labor and low living standards of our island possessions and Cuba, and in order to make it possible for our sugar-producing farmers to receive a small benefit, it is strongly demanded that the consumers pay something like 50 per cent additional for sugar over what the price would be if we bought, unhindered, the Cuban output. It is claimed by many that the free duty sugar from the island possessions has been the main cause of the fall

in sugar prices. To a disinterested observer it would seem that the 50 per cent of our sugar supply coming from Cuba is the one and sufficient governor of the American sugar market. When Cuban sugar is abundant, the price falls; when it is less abundant, the price rises. It looks as though it would continue to be abundant, except at such times as it is superabundant.

The Tariff on Wool. Another tariff which will work, and which always has worked, is the tariff on wool. Wool, like wheat, is a pioneer product. The great bulk of the wool produced in the United States comes from the Rocky Mountain district, Texas, and California. Not quite 7 per cent of our farmers produce wool, but these, not one in twelve, receive \$100 each by way of tariff benefit. In order to bring this to pass, the consumers pay probably \$132,000,000, or over three times as much as the producers receive. Contrary to the usual popular opinion we do not find that the woolen tariffs are pyramided to any great extent. Of course, it would be done if it were feasible. Competition of one sort and another tends strongly to hold the prices down during recent years, with the result that the costs are not increased by such bounds as 10 and 50 per cent respectively by spinners, weavers, jobbers, and tailors. It seems rather that the merchants and tailors are working on a basis of aggregate profits, or returns on capital invested rather than on a percentage of turnover. This being the case, the traditional mark-up of a given percentage over costs all along the line goes its way with other cost of production doctrines.

The Tariff on Butter. Here we have one of the most interesting of the borderline cases of protection. It was easy a few years ago to figure out a case for the increase in the butter tariff from eight cents to twelve cents. It was held that the farmers needed it and that it would be effective. That the farmers need an added income will be accepted generally. That the eight-cent tariff was inadequate was also widely believed. This belief was based on the rather tangible fact that our prices were above world prices, and the further fact that we were importing some ten to twenty-five million pounds per annum. It was assumed that an increased tariff would discourage importations. This assump-

tion was correct. It was not appreciated, however, that the eight-cent tariff was adequate to keep out substantially all foreign butter, although such was the case. Over a period of years since the present tariff act has been in force, the usual difference in butter prices between England and the United States has been, allowing for shipping charges, about six or seven cents. Thus all there was for the tariff to do was to furnish a barrier sufficient to prevent foreign competition from taking advantage of a six- or eight-cent margin. The twelve-cent tariff is, and has been, fully adequate; our imports being insignificant. For some years the total annual benefit of the butter tariff to the farmer has been about \$125,000,000. Just at present, it is below that proportional amount, and will not, unless the market recovers, reach \$100,000,000 for the next year.

It is not foreign competition which is depressing the butter market at the present time; rather it is the competition among our own producers, and a lack of willingness, perhaps ability, to buy among our consumers. The amounts may look small, but when we find 40,000,000 pounds additional butter in storage and a falling off of 2,000,000 pounds in consumption during the first ten months of the year, even though the amounts may seem small, the results are positive and prices move inevitably downward. In this movement of dairy prices we have an illustration of the working of a tariff on a commodity the quantity of which may be above and may be below that wanted in the home market. While the tariff may raise the price for a time, when the reaction comes, as it is sure to do, the result is a decided slump, down to the world price level.

The demand for butter is decidedly elastic in that more will be used at a low and less at a high price. The elasticity curve is not at all a symmetrical one, however. While the people as a whole will take somewhat more butter as the price goes below normal, unlike, for example, the demand for bread or potatoes, the demand falls off with unusual abruptness as the price rises above normal. Thus when it happens, as was the case this past fall, that butter prices were about as high as the year before but with a little more in storage, the

holders of butter became extremely nervous, especially as they watched the mounting output of oleomargarine. With a slight weakening in buying power, the breaking point in butter prices came a little earlier than had been anticipated. The laborers, and others with modest incomes, find some other grease than butter, even though less pleasing to nostrils and palate, preferable in view of the possible saving in expenses of a few dollars a month. The elasticity of the demand for butter is due in part to the ease with which substitutes may be found.

Closely associated with the butter tariffs are the other dairy product duties. Suffice it to say that the whole group should be balanced, which was not the case under the Fordney-McCumber tariff Act. The increases in the milk, cream, and cheese rates have taken care of the discrepancies measurably well.

A Look Ahead

Like all other looks ahead, the vision of farm profits due to additional tariffs is uncertain. Worse than that, it is far from rosy. Like the case of the Emperor's new clothes in the fairy tale, which were visible to those only who were worthy of their offices and positions, it has come to pass that those who are clearly and consciously worthy of positions within the gift of the dominant, protectionist party are best able to foresee the fulfillment of the prophesies in the rainbow of tariff hopes. The fact is they are under obligation, not to say oath, to see these prophetic visions. Never has the mirage of the desert served more surely the purpose of luring travelers away from the desired path than has the tariff mirage served to steer farmers away from the best oases to be found amid the desert of low prices. Nor have mermaids sung more enchanting melodies to the confusion of the mariners than have been chanted by the followers of the high priests of protection to the tune of higher duties on farm products bringing distraction to farmers trying to make the passage between the Scylla of high prices due to protection on the one hand, and the Charybdis of low farm prices on the other.

No doubt the prices of certain farm products can be raised somewhat by higher tariffs. That this will help the farmer appreciably is quite another matter. For example, the main instances of further price influence of farm products will be through higher duties on sugar, wool, and flax. These three products amount in value to less than $2\frac{1}{2}$ per cent of the farmer income, and higher prices of the same will result in a deficit instead of an asset to the farmers as a group. Higher duties on cattle and beef will, on paper, result in added farm income. Practically the supposed advantages will be offset through a resort on the part of meat eaters to pork, mutton, and cheese, or to a reduced intake—with a corresponding reduction in the quantity of leather needed for making belts, again creating a poorer market for a farm product. The increased duties on pork may be effective in the future, not too near future, and undoubtedly after all outstanding mortgages have come due. The added duties on corn, barley, and buckwheat will be ineffective, while those on sheep will be effective to an inappreciable degree. In sharp contrast with these, the major items, the increased duties on winter grown tomatoes, Bermuda onions, and olive oil will result in higher prices. So also the duties on casein and blackstrap molasses may result in increasing the cost of billiard balls, glazed paper, and alcohol, with a few additional pennies trickling back to the farmers.

To sum the matter up, one may say that the farmers are now getting about half a billion dollars out of agricultural duties—probably an exaggerated figure. This increase may be augmented by possibly 20 per cent. In return for these favors farmers are paying out much larger sums in the way of increased prices on clothing, steel products, cement and other building materials, household furnishings, chemicals, paints, and a thousand and one articles of everyday use. It is safe to say that for every dollar in tariff benefits received by the farmer, several dollars are contributed in turn in tariff benefits for the products of manufacturers. In view of the difficulty of an adjustment downward of the general tariff schedule, it is quite justifiable for the farmer to take what he can get by way of compensating duties. On the

other hand, it is extremely unfortunate that he should commit himself to a general high tariff policy for years to come in order to avail himself of some additional tariff husks, while the kernels are appropriated by the interests which so successfully handle the farmer and his affairs to their own advantage.

ANALYSIS OF TARIFF DUTIES

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Tariff problems have frequently been cited as examples of those which do not lend themselves to quantitative analysis. Mr. J. C. Cobb in an article in the *American Economic Review* of September 1926 takes issue with this position, contending that all that is needed is to break them up into their component parts and solve these one at a time. Suppose we apply this suggestion to the analysis of tariff duties. The component parts of such a problem are the following:

- I. The effects of a given range of duties on the domestic and the foreign price structure of the commodity to which applied.
- II. The effects of this range of duties on domestic and foreign production.
- III. The effects on domestic and foreign consumption.
- IV. The associated effects on international trade in the product.
- V. The effects on the customs receipts of the nation.
- VI. The effects of this range of rates on the cost structure of the commodity in question.
- VII. The associated effects on population, land utilization and other related subjects.
- VIII. The effects on the price structure, production, consumption, trade, the cost structure, population, land utilization, etc., of a whole system of customs duties. This is a necessary part of the analysis since it cannot be assumed that the commodity in question will be protected except as part of a general system of protective duties.
- IX. The best national program as to production, consumption, and trade in the commodity in question. The program adopted may aim, among others, at any one of the following ends:

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1. The welfare of the nation as a whole.
2. The welfare of agriculture as a whole without regard to the rest of the nation.
3. The highest average price for the commodity in question.
4. Complete exclusion of all imports of the commodity—all grades and types at all possible ports of entry at all seasons of the year, and in all emergencies.

These ends may conflict with each other seriously, even the last two of them, although this may not appear at first glance.

- X. The best national program of production, consumption, etc., as it is involved in a whole system of tariff duties. This final step is needed because, as already stated, seldom is any product protected except as part of a whole system of duties.

Two Procedures Contrasted

In general, there are two lines of procedure followed in analyzing the effects of tariff duties. The more common practice, and the one easiest to comprehend, is to compare prices in the country imposing the duty and in the other countries affected before and after a duty is imposed, or changed, and on the basis of the results obtained, to project the effects of a proposed change. This is essentially a *historical* method, in the proper meaning of that term. The other method involves setting up elasticity of production and elasticity of consumption curves in the country imposing the duty, and in all the other countries affected, and on the basis of a matching of these curves against each other, forecasting the probable effects on production, consumption, prices, etc., in all the countries affected. The aim of the method is to determine in advance the new equilibrium that will be established, if nothing else interferes, after the new duty has been in effect long enough for all the repercussions from it to have died down. This may be called the *equilibrium* method of analyzing tariff duties.

Clearly the second method is the more scientific of the

two, in that it undertakes to get behind the external phenomena of effects and show how they were produced, and more than that, actually to measure quantitatively the various relationships that maintained in the period examined. The first method indicates the future by the simple procedure of extrapolation, of projecting a trend, ordinarily a straight horizontal line, since ordinarily an average of a past period is taken as a description of the future. The second method attempts to single out the various influences that have shaped the effects in the past, to examine each of these influences separately, and thus to furnish a more secure basis for forecasting.

Clearly, also, only the second method can be used for projecting the effect of duties for the first time imposed on a commodity.

In practice, however, the historical method is the one more commonly used. It is the method used by Professor Hibbard and his associates in the study upon which he has reported today, and by the writer in his chapter on the tariff in "Agricultural Reform in the United States." The U. S. Tariff Commission commonly uses it whenever it gets down to the actual task of forecasting the effects of duties on prices and production. The equilibrium method was presented in a paper by Professor Schultz before this association three years ago, under the title "Cost of Production, Supply and Demand, and the Tariff." There is a fuller discussion of it in Schultz's book on the subject.¹ Professor Pigou discusses the subject in his "Economics of Welfare"; also Philip G. Wright in his treatment of the sugar tariff. An excellent simple statement of the economic analyses involved appears in an article by Professor T. N. Carver in "The Economic Journal" of England, Vol. 34, 1924. The writer touched certain aspects of the analysis in an article called "The Elasticity of Supply" published in the *JOURNAL OF FARM ECONOMICS* in April 1924.

The limitations of the equilibrium method grow out of the difficulties in its use. It is virtually impossible to construct really satisfactory curves of elasticity of production and

¹ "Statistical Laws of Supply and Demand."

consumption for the United States, to say nothing for the competing countries. Nevertheless, the equilibrium method is the one which we should keep in the foreground whenever we plan research in this field. The historical method is at the best only a first step in the analysis. The elasticity curves we set up may fall far short of what we would like, and yet give us a sufficiently more adequate basis for forecasting to make our labors worth while.

Further details as to these two procedures will be developed under the following heads.

Effects on Prices

The only one of the ten effects above listed which has received any appreciable attention from agricultural economists is the effect of tariff duties on prices. But even on this phase of the problem, analysis has not yet proceeded very far, as appears from the following:

Historical approach—The common historical procedure in studying the effect of tariff duties on the prices of a commodity is first to compare the differentials between the markets of the United States and the potentially importing countries before and after the duty was first imposed, or was raised or lowered to a new level. This is a legitimate procedure, as a first step, but subject to severe qualifications, among which are the following:

1. Close comparability as to grades is commonly difficult, if not impossible. Doctors Davis and Taylor have cited an opinion of the trade that the duty on wheat increased the differential between United States and Canadian prices by 10 to 15 cents per bushel. Doctors Hibbard, Commons, and Perlman arrived at a figure of 9.8 cents for the period since 1922. My own estimate was from five to ten cents, probably nearer the five cents, for the years since 1924. Probably the safest procedure is to take the grade in the exporting country that is most likely to be imported by the others, and get the price of its equivalent in the importing country before and after the duty was imposed. When this procedure is applied to wheat, the Canadian grade No. 1 Northern Spring is higher than any grade in the United States, and it is this grade mostly that is imported

into the United States. The nearest equivalent quotation in the United States, that for No. 1 Northern Spring, represents the poorest wheat that will be accepted on contract for that grade. We therefore have no statistics as to the price of wheat of the same high quality as that mostly imported. The alternative procedure that has been adopted to some extent is to take a Canadian grade about as low as our No. 1 Northern Spring, probably No. 3. But little of such grain is actually imported, or would be if the duty permitted appreciable imports. Hence this comparison is unreal. If one judges by comparing the top grades in the two markets, one finds the differential scarcely so high since 1924 as it was from 1913 to 1917 when only a ten cent duty was imposed, when it ranged from 2 to 7 cents in yearly averages.

2. With products subject to deficits or surpluses according to the weather, or cycles of production—like wheat, butter, beef, potatoes, rice, oats, and hay locally, and even flax seed and long staple cotton—an average of many years, probably from 15 to 20, is needed before a stable figure is attained, and in a period of that length, trends are likely to develop which make an average for the whole period out-of-date at the end of it. And moving averages can be used safely only with *regular* cycles, which are not characteristic of these products. The best that one can do is fit a line or curve to the data.

3. Even if an average were obtained in which the chance or cyclical variations offset each other exactly, the average differential between them would not necessarily measure the effect of the duty on prices. Suppose that the tariff on wool is 31 cents per pound, that transportation costs are 5 cents, and that the average differential in the last six years has been 26 cents; does this prove that the duty has been fully effective on prices? Unfortunately for such a contention, the differential between London and Boston markets has ranged by years from 20 to 41 cents for "fine staple wool, scoured," which means that other factors than the tariff duty and transportation costs are responsible for the differential. If the differentials average the same as the duty less transportation costs for a period of six years, it is largely a matter of accident—the other influences just

happened to average the right amount to give the figure of 26 cents. From 1922 to 1927, the differential had a definite trend downward. At present it is around 33 cents.

4. The choice of markets between which to figure the differentials is of much consequence. The effects of tariffs are to a large degree local in a country as large as the United States. The differential between corn prices in New England or California and Argentina will be something noticeably higher than between Chicago and Argentine; that between potato prices in New Brunswick and Boston appreciably higher than that between potato prices in Minneapolis and Manitoba. The effect of the duty on oats prices may become very apparent in central New York when the crop is short in that district.

5. Changes in freight and other marketing costs must be watched not only as they apply as to the same product, but as to different forms of that product. Exports of corn from the United States to Europe were large enough around 1900 to 1905 so that land and ocean freight charges probably figured in the price of corn in Chicago. To-day exports of corn are so small that probably it is the land and ocean charges on lard and other pork products that is reflected in corn prices in the Chicago market. A comparison of corn price differentials between Chicago and Argentina now and in 1905 must take account of the changes noted.

6. Lastly, the effects of most duties on price differentials cannot be expected to take their final form at once. One must wait till production, consumption, and currents of trade for all the countries affected have had time to adjust themselves to the new influence. The repercussions may continue for several years.

It should be clear from the foregoing that no very accurate results are possible even for this step in the analysis.

Who pays the duty? Assuming that the change in the differential has been determined with reasonable precision, there is next to determine how the effects have been divided between the importing and the exporting countries. The exporters of potatoes in New Brunswick will look at the higher prices ruling in the Boston market and say that they pay the increased differential. The dealers and consumers

in Boston will look at the lower prices in New Brunswick and say that they pay the differential. The growers of feeder cattle in Canada will say that they pay the apparent differential on feeder cattle; but the buyers of feeder cattle in the United States will look at the lower prices in Canada and say that they pay the differential. It will similarly be argued both by the Cuban sugar producers and by the consumers in the United States that they pay the increased differentials arising from a higher sugar duty. Both cannot be right. The fact is that the increased differentials are divided between the two countries in proportions that depend upon the elasticity of the production and consumption in all the exporting countries, and the elasticity of the consumption and production in the importing country. The Canadian growers of feeder cattle on the western prairies have few alternative lines of production, and their market for feeder cattle outside the United States is very poor. On the other hand, the output of feeder cattle within the United States is rather easily increased, and the consumption of beef is relatively elastic. This statement is supported by the fact that imports of feeder cattle from Canada have continued at a high level in spite of a duty of \$1.50 per cwt., which is around 30 per cent of the price. Therefore the Canadians pay most of the increased differential on beef. The producers of feeder cattle in the United States get very little more for their product because of the duty. The revenues of the United States government are increased because imports continue in spite of the tariff. The fact that Canada is a small country and the United States a large one makes the above effects all the more pronounced. Fifty thousand feeder cattle have a very slight effect on the United States market; they may break the domestic Canadian market.

Much the same analysis applies to the potato situation. The duty makes prices in the Boston market higher in short years than they otherwise would be by the cost of the additional transportation from the West caused within the United States and by the effect of the additional quantity of domestic potatoes that are consumed; but this same quantity of domestic potatoes would add much more to New Brunswick prices if it could find an outlet here. Over a few years, the output of potatoes in the United States is very elastic.

The sugar analysis is more complicated. The consumption of sugar in the United States is rather inelastic. The supply within the United States is also relatively inelastic; but in the three dependencies of the United States—Porto Rico, the Philippines, and Hawaii—whose sugar enters free of duty, rather elastic. Consumption of sugar in the United States is increasing rapidly, about keeping up with the expansion in the three dependencies. Most of the imports are from Cuba. It is true that the owners of existing plantations have no alternatives in the way of other products to turn to, and they lose when they run their plantation below capacity; but they have a wide market outside of the United States on which to sell the sugar which is excluded from the United States. The present low price of sugar in Cuba cannot be attributed to any great extent to the United States tariff duties, but to a general state of over-expansion in the industry. No doubt the adding of new tariff barriers in many countries at the same time, as has happened in the past ten years, is a contributing factor. The conclusion to be drawn from the foregoing is that the major part, but by no means all, of the differential between Cuban and United States prices is paid by the consumers in the United States. World prices of sugar, and Cuban prices along with them, are lowered to some extent by the new production that is stimulated in the United States dependencies by the high protection which is afforded it by our tariff duties. Dr. Schultz's calculation is that \$1.00 of sugar duty adds \$.86 to the domestic price in the United States.²

The historical procedure for determining how the new differential is divided between the importing and the exporting country is to observe how prices have changed in *each* country affected when the duty was imposed or changed. How much did the price of flaxseed rise in the United States following the last increase in the duty; and how much did it fall in Argentine and Canada? Similarly, how were cream prices in various consuming centers in the United States, in producing territory in Wisconsin, and in Canada affected by the recent increase in the cream duty? The difficulty with this procedure is that other factors are constantly causing prices to change in any country, and one cannot readily

² JOURNAL OF FARM ECONOMICS, January, 1926.

separate their effects from those due to the change in duty. If data are available for a period of years before and after the change in duty, and these are carefully analyzed, evidences of real significance may be obtained. Of value in some cases is to compare the change in prices in countries affected by the change in duty, with those in countries not affected by it. This method has some value in the case of cream from Canada. But if the product is one which has a world market, the whole world level of prices is affected, and there are no outside datum points to use as a basis of comparison.

The Equilibrium Method. Time does not permit a full discussion of the application of the method of equilibrium to the problem. It may be conceived of as comprehending in one equation both the change in the price differential and the division of it between the two countries. Or it may be conceived merely as a basis for dividing a change in differential that has been historically determined. In any case, a preliminary analysis by the historical method is eminently desirable.

The essence of the equilibrium method is the determination of the curves of elasticity of production and elasticity of consumption. Please note that the terms production and consumption have been used instead of supply and demand. This practice has been followed because we are in this case interested in producer and consumer responses to price changes. Supply and demand curves may be in terms of behavior in producers', dealers' or retailers' markets, or in any market desired. The problem in hand may indeed be set up in terms of dealers' behavior if it is desired. In that case, the demands of buyers for sale in other foreign markets must appear in the demand curves of the excluded countries; and the offerings of sellers from abroad in the supply curve of the protected country. If the problem is set up in terms of producer and consumer behavior, the element of lag in response must be amply provided for. The elasticity curves must indicate on the one hand what the producers stand ready at their next opportunity to produce, and on the other, what the consumers stand ready at their next opportunity to consume, at a given range of prices. The

curves must be set up in such a way, however, that the prices which enter into the equilibrium are in the same market. (See Dr. Ezekiel's article in the *Quarterly Journal of Economics*, February, 1928, for a discussion of this problem.) The equilibrium set up on this basis will, if properly done, eliminate all the temporary or abnormal factors, and truly indicate the production, consumption, and prices that will presently ensue if no new disturbing elements enter into the situation, with a given change in the duty.

How closely such elasticity curves can be approximated, is a serious question, and to be answered differently for different commodities. Data as to what producers actually now stand ready to produce, or consumers to consume, at a range of prices, are of course entirely wanting. Instead, what we have are data as to amounts that have been produced and consumed at various prices over a period in the past. The prices are equilibrium points, not points on either the production or the consumption curves, except under certain conditions which have been pointed out by Mr. Elmer Working.³ Intentions-to-plant and anticipated-price data, could they be ascertained by years over a period of years with fair certainty, might give an approximation to a production elasticity curve, were it not that the production schedule for different products shifts with every change in the technique of production of this and competing products, as well as with a host of other changes. The additional production that would be intended with higher prices would come mostly from more output from present producers, but to some extent from new producers. Allowance must be made for the lag in intentions to plant following a rise in prices. If actual plantings are used in place of intentions, there is the further lag due to fixity in farm enterprises, and also various interferences any year that change the plantings from what was intended. Actual prices the preceding year are probably far from being the "anticipated" prices for the new year. Intentions-to-buy data are even harder to obtain than intentions-to-plant data. Data of actual purchases and consumption are subject to the same limitations as those of production and sale. Despite the great dif-

³ *Quarterly Journal of Economics*, February, 1927.

ficulties involved in such analysis, however, it represents a line of progress and should be pursued.

In the analysis of Schultz and others, the production and the consumption of all the rest of the world is considered as one lump sum. The foregoing discussion has assumed that each competing country will be treated as a separate element in the problem. As a matter of pure mathematics, Schultz's procedure is adequate. In practice, however, the conclusions reached must be based upon a great deal of supplementary information which is specific to each country affected. The historical approach is also by countries. Once a duty is imposed, its effects are observed on competitive relationships in each country separately. It seems best, therefore, that the problem be set up in terms of the principal competing countries separately.

One other statement perhaps needs to be made. In forecasting the effect of a new or added duty, if the new balance of production and consumption in the protected country gives domestic self-sufficiency at less than the duty proposed, then the duty will not be fully effective on the price differential. If the new balance still leaves a domestic deficit, there will still be imports, and the duty will be fully effective on the price differential. Also crops will be large or small according to the weather, and in consequence some of the duties will be effective part of the time and part of the time not. The forecast must anticipate the fluctuations in yield and production.

Recent studies. It may be worth while to consider for a moment the two recent studies above mentioned in the light of the foregoing analysis. Both were hurriedly done, designed to present the general picture rather than accuracy as to individual products. Neither employs with even a moderate degree of thoroughness either of the methods above outlined. The Wisconsin study devoted much the more time and resources to the study and probably dug up more data pertinent to the subject. The two general pictures presented are very much alike. But there are differences enough as to detail so that anyone interested in the subject will profit greatly from reading both reports. Some of the more important differences are the following:

1. The authors of the Wisconsin study apparently assumed that the consumer in the United States pays all of the differential. One hesitates to come to such a drastic conclusion and the writer naturally refrained from it as long as possible. But after Professor Hibbard, in his review of the writer's "Agricultural Reform in the United States" in the last *Economic Review*, made the following remark: . . . "in any case, how can the consumer escape paying all of it?" (meaning added costs of marketing) no other conclusion seemed reasonable. Apparently so far as at least one member of the Wisconsin triumvirate is concerned, the judgment seems to be that the consumer in the last analysis pays all tariff duties, all taxes, all freight rates, all advertising costs, etc. Or perhaps the writer has misinterpreted Dr. Hibbard's remark! The Wisconsin study seems to assume that the consumer in the United States pays all the sugar differentials, all the feeder cattle and beef differentials, all the dairy products differentials; also the differentials for wool, flaxseed and some other products. No effort seems to have been made to observe the changes in prices resulting in other markets. The result is that the increases in the United States of gross receipts of the growers, and of outlays of consumers are mostly considerably higher in the Wisconsin study. The speaker would be inclined to say that the increases in differentials on dressed beef between the United States and Canada is made up more largely of a decline in Canadian prices than of a rise in our prices, and that even the wool differential to an appreciable extent is composed of a decline in world prices as a result of our own expanded production and contracted consumption.

2. The Wisconsin study advances a theory to the effect that expanding production in the United States lowers the price differentials by increasing competition between domestic producers. The theory is applied especially to the beef and butter differentials. The speaker finds himself at a loss to comprehend this theory in the form presented. If all that is meant is that a product which is produced in amounts close to domestic self-sufficiency will be imported more of the time as production approaches self-sufficiency, and hence the average differentials will be less, then the

theory is understandable; but it introduces no new element in the problem and should not be presented as if it did. It seems necessary to believe that something other than this is intended; and until the authors of the Wisconsin study explain themselves further, we shall be in darkness. It is true that there is a line of analysis about the incidence of taxes in relation to increasing and decreasing cost goods—it is discussed by Marshall, Pigou and others; but it does not apply to the problem in hand. Neither does Marshall's discussion of the effect of increased facilities in production (p. 465, 1910 Edition) furnish a basis for such a theory. Until the Wisconsin workers expound and demonstrate their theory, we shall have to say that mere rate of expansion in production behind a tariff barrier can have no important effect on price differentials so long as production stays wholly below domestic consumption.

3. The Wisconsin study, except in a few instances, does not recognize local differences in the effect of tariff duties on prices. The omission is especially notable in the case of wheat, corn, oats and vegetable oils.

4. There is a similar omission of the seasonal element in differentials for butter and eggs. It is recognized in the case of milk and cream, and lamb and mutton.

5. The Wisconsin study reports higher price differentials for butter, sugar, wheat and other products; but less for long staple cotton, corn, oats and some of the vegetable oils.

Effect on Production

We have thus far discussed only one of the ten headings listed under our outline of the effects of tariff duties; and even this one we have discussed inadequately. We shall be able to say only a word or two about each of the remainder, with a view merely to giving a glimpse as to the nature of the analysis involved.

With the historical procedure, forecasting the effect of a tariff duty on production is a separate operation, essayed by comparing production in all the countries affected before and after the change in the duty, and then attempting to eliminate the other possible causes of changes. Applied to

wool, this operation would include estimating how much of the increase in number of sheep in the United States since 1921 has been due to the increase in the wool duty and how much to the higher price of lamb and mutton. The higher price of mutton has apparently stimulated sheep raising in other countries. How has this affected the problem? With the equilibrium method, the analysis of the effects of tariff duties on production is essentially a detail of the analysis of their effect on prices. One must have a statement of the relationship of prices to production in each country before the price effect can be determined or the price differential can be divided.

Studies of this nature need to be made by regions. The set of causes operating is likely to be different for each. Any state experiment station can properly undertake such a determination for the territory within its borders. Ohio, South Dakota and Idaho can each ascertain so far as possible the effects of the rising wool duties on wool production within its boundaries.

As a further step in such analysis, the farm management workers, using the method of farm budgeting (or substitution), can undertake to estimate the effect on the net income of the farmers in the area of a range of proportions of the enterprise in question at various prices of the product. It is probable that procedure along this line will assist greatly in constructing a normal supply curve. It will not be very easy to follow such a procedure in constructing supply curves for foreign countries.

Effect on Consumption

This phase of the subject is usually discussed under the head of elasticity of demand—a much harassed subject, to be assailed anew in another number of this year's program of the Association. The general procedure and the problems involved are much the same as for the production and supply studies mentioned under the last head. Historical changes in consumption following changes in prices due to duty impositions are even harder to isolate than changes in supply due to such causes. Effects on consumption budgets at vari-

ous prices are far harder to isolate than the comparable effects in production. Nevertheless these are the necessary lines of approach to the problem.

Effect on International Trade in the Product

If the foregoing steps in the analysis were satisfactorily completed, there would be little left to do under the head of effects on international trade in the product. One would need merely to fit together the results for the different countries competing in the world market. In practice, because of the difficulties above stated, one commonly goes directly to historical changes in trade in the commodity for evidence as to the effects of duties on production, consumption and prices. The problem then becomes one of determining historical trends and isolating various effects.

One naturally thinks of the principle of comparative advantage whenever international trade is mentioned. Suffice to say that if output curves were known for each of the countries competing or potentially competing in the production of a commodity, one would have the results of a comparative advantage analysis already determined, since the production curve for any commodity is itself an expression of relative ratio of advantage in production. Comparative advantage analysis is to be looked upon as carrying the explanation one stage farther back.

Effects on Customs Receipts

The problem under this head is that of determining the relation between the amount of the duty and the total income from the duty. Products which have an inelastic demand and an inelastic supply in the home country will yield increasingly high returns as the duty is raised. Sugar is an example of such a product. If the sugar of Hawaii, Porto Rico and the Philippines could be taxed, the case would be even clearer. Duties on butter, beef and most products of this nature are of the opposite type, only a small duty being needed to keep out nearly all imports.

It is apparent from the foregoing that the principles involved in the analysis of the effect of duties on revenue

receipts are those already stated. The special research procedures required are simple.

Effects on the Cost Structure

The relation between duties and subsequent costs of production have rarely been analyzed quantitatively; and are much in need of it. But probably such research will not be very fruitful at the start. The student of the problem needs a better grasp of its qualitative elements than is commonly possessed. The procedure that suggests itself at first is the historical one of observing how rents, land values, wages and other cost-rates of similar nature have behaved in an area following changes in the duties. There will usually be a complex of casual relationships to untangle if this approach is followed. There will be a pronounced lag in all the responses involved. Not until new combinations of enterprises which reflect the new profits from the duty have been rather commonly adopted, will rents rise, or wages. Not only are the cost-rates of the product in question readjusting themselves, but of all products competing with it anywhere for land, labor and capital. Contemporaneously, another set of readjustments is going on in the excluded countries—in fact, in all countries contributing such a product to the world market for it, if one exists.

It is important to realize that once such readjustments have taken place, a new production curve has come into existence. It is not possible, therefore, to forecast from a currently applicable curve the final effect on production of a change in duties.

Probably the importance of analysis of the effect of duties on cost-rates is in theory rather than in application. However, if tariff duties ever were in fact based on differences in cost of production between countries, then such analysis would become of great practical importance. True differences in cost of production between countries are to be explained wholly by the existence of effective duties, plus maladjustments between prices, production, cost-rates, exchange rates and the like, that exist because of lag in readjustments. If economic society were completely fluid, cost-rates would at once and exactly reflect the rates of duty. A clear under-

standing of this would help greatly the cogitations of our Tariff Commissioners.

Not until the effects on the cost structure are determined are we in a position to assess the final effects on profits and the welfare of the producers of the commodity.

Let us pass over the effects on population and land utilization with the remark that a large and difficult program of both qualitative and quantitative analysis is involved.

Effects of a Whole Protective System

This part of the problem involves the relation of a protective system to the general level of prices and cost rates. The generally accepted statement on this point is that prices of export goods do not have their prices raised, that those of domestic-deficit goods do, that those of purely domestic goods (those not entering into foreign trade) also do, and that as a result, the average price level, the cost of living, and money wages, are all placed on a higher level. Obviously no study of the effects of tariff duties on agriculture is anywhere nearly complete which stops, as do the two recent studies previously mentioned, with noting the effects of single duties taken one at a time on prices of the commodities to which they are applied. No one would say, for example, that the rents of houses and sites in our cities do not reflect the tariff system under which we are operating, and that these rents have nothing to do with middlemen's margins or farm products, or transportation rates, or machinery costs, or prices of farm products generally.

The National Program for the Product

The program of research along these lines must accept a definite objective, such as one of the four previously mentioned, and adjust its technique to the objective chosen. If either the welfare of the nation, or that of agriculture alone, is taken as the objective, the logical method of attack is to apply the method of budgeting (or substitution) to the nation in much the same manner as one would apply it to an individual farm, with a view to forecasting the effect on the real net income of the nation, over a reasonable period of

years, of the proposed change. Many phases of the method of budgeting will necessarily take on new forms when applied to a unit such as a nation. The social aspects of the problem will take on new importance. One will begin thinking in terms of the quality and numbers of the population, and conservation, as well as in terms of national balance sheets in dollars and cents. All of the theories about infant industries and the like will enter into the problem.

Obviously in such an analysis, as well as in the major determination as to which of the four or more objectives will be accepted, many issues arise that are extremely difficult to reduce to a quantitative basis.

A National Protective System

After all the foregoing separate analyses have been made for all products, there is still to be studied the effect over a space of years of a system of protective duties in its totality. Such effect cannot be determined simply by adding together the separate effects of duties on the different products. Implied in the analysis of the effects for any one product is the assumption that the duties for the rest will remain as they are. A duty may cause the production of any one of many products to expand to a certain degree or the consumption of it to contract to a certain degree. But can it cause the production of all products to expand at the same time to the degree thus determined, and consumption of all to contract at the same time to such a degree? Most of the expansion which we observe following tariff impositions is at the expense of other production. Consumption is likewise competitive.

The most important aspect of the problem in hand is the effect on agriculture as a whole of a protective system in its totality.

While no doubt some headway can be made with the tariff problem in its totality, no argument is needed to prove that the determinations reached will be highly approximate. Both comparative studies of the effects of the protective systems of different countries, and historical studies of the effects of changes in the system for any country, yield uncertain conclusions. Too many circumstances beside the

tariff history of different countries have an important bearing on their relative prosperity. For example, it would never do to attribute mostly to differences in tariff policy the wide gap between the Danish and Italian scale of living.

The Nature of the Research Problem

A safe conclusion from the foregoing is that breaking up the tariff problem into its component parts will help toward its solution, but that this reveals a very large number of parts, and that most of these are difficult to reduce to quantitative terms, and some of them clearly outside of the quantitative realm, at least for a long time to come. There are, however, significant portions of the program of research upon which definite progress can easily be made; and research on these portions of it should be vigorously encouraged.

In the meantime, we must guard ourselves against assigning too much accuracy to the results of our analyses. Discussion under the first head made it clear that effects of duties on price differentials can be only approximately stated and that the effects on prices in the protected country can be ascertained with only still more uncertainty. And yet these are two of the most determinable of the steps in the analysis of the effects of tariff duties.

DISCUSSION BY H. C. TAYLOR

VERMONT COUNTY LIFE COMMISSION

The papers by Dr. Hibbard and Dr. Black leave little to be said. They point definitely toward the need of tariff revision downward in the interest of agriculture rather than an increase in the tariff schedules.

While the present protective tariff is effective in increasing the prices of things farmers buy, it is ineffective on the great staples of American agriculture, and, furthermore, it has been made clear that the Government has no intention of making the agricultural tariff schedules effective.

Since tariff revision downward is the need, not words but actions are now needed. It is true that in his book on Farm Relief, Seligman passed over the question of tariff revision downward by saying that this subject "is as yet beyond the pale of practical politics." Younger men may have more optimism and the activities in Congress in recent months would seem to point toward the hope that in due course of time those who are now suffering from the tariff may get their thoughts organized to the point of group action.

There is some ground for pessimism, however, when one contemplates the way in which the farmers of the Middle West have voted against themselves on tariff questions for a generation or more. They have voted for higher prices for the things they buy without any possibility of securing higher prices for the things they sell as a result of the tariff. It appears that this misguided action is due largely to emotions which originated at the time of the Civil War. I have sometimes thought that the Civil War created more slaves than it set free. Certainly, more political slaves and party slaves were created than the number of economic slaves set free. But this will not last. The campaign to make the tariff effective for farm products of which we produce a surplus has not been successful in making the tariff effective but it has certainly been successful in teaching the farmers who produce exportable surpluses that the so-called protective tariff is a meaningless and valueless thing which they have been accepting in exchange for effective tariffs on the things which they buy. I, personally, believe that the party slaves will break their bonds and learn to vote in accordance with their own interests. When this comes to pass, there will be a revision of the tariff downward, but this requires clear thinking, not only by individuals but by large groups of people as a basis of action.

In his paper, the Chairman of the Federal Farm Board suggested the reduction of wheat production in this country twenty per cent in order to make the tariff effective. This is a suggestion of stupendous significance. It means either vast areas of land going out of use or vast increases in other lines of production where prices are now none too satisfactory. But the most significant thing is that this idea of limiting production with a view to enhancing prices is now current throughout the industrial world and being promoted by the same government which one time passed the Sherman Anti-Trust Law.

It is well understood that while the limitation of production in agriculture with a view to improving prices is a remote possibility, the adjustment of production with a view to maintaining prices of manufactured products is an immediate reality.

I would call attention, therefore, to the fact that the tariff is but one of a class of questions relating to the limitation of competition with a view to price elevation and that in all of these methods of limitation of competition and price elevation the manufacturing and distributive industries because of their limited numbers and highly centralized organization are more and more able to limit competition while agriculture continues on a basis of free competition. So long as these conditions obtain, the occupational distribution of wealth will be a serious problem requiring the thought and action of those interested in the future of our social and political structure.

DISCUSSION BY M. R. BENEDICT

SOUTH DAKOTA STATE COLLEGE

It is a hopeful indication of the growing maturity of research in the economics of agriculture that much attention is now being given both to the development of new research methods and to a more critical study of the possibilities and limitations of methods now in general use.

In studying the various relationships between the tariff and the agricultural

industry, we are not, to be sure, in the stage of trying to make bricks without straw, but we do seem to be trying to build brick walls without first making the bricks out of which these walls must be built.

Dr. Black has indicated some of the bricks that are needed before we can construct the mosaic which will form the only true picture of the tariff situation. I can add scarcely any item which has not been implied in one form or another in the brief space of his paper. I shall attempt, therefore, not so much to review these points as to try to fill in a few of the interstices which obviously could not be covered in so brief a space, and which likewise, of course, cannot be covered at all fully in my discussion.

It would seem that one of the first needs in the study of tariff problems is the development of a clear distinction between matters of policy and matters of fact. Whether the development of policy falls in the proper realm of economic study or in that of government or sociology need not be settled here. Dr. Black apparently feels that it is suitable fodder for the economic mill. At any rate, as a step in analytical method, it seems highly desirable that these elements be kept distinctly separate in the mind of the investigator. We need to know just what are the effects of a given change whether we as individuals consider these effects desirable, undesirable, or neutral. Few discussions and studies of the tariff are wholly objective.

Until we have a more definite factual basis on which to build, it is doubtful if we can hope to develop policies that will be well-balanced in anything more than their general outlines. Consideration of the details of the working of any given tariff schedule carries us, in our present state of knowledge, rather far into the realm of conjecture.

Dr. Black might well, had space permitted, have further subdivided the component parts of the problem along lines lightly touched upon in places. It would seem, as has been indicated, that in our consideration of the effects of given tariff schedules, we have generally thought of them too much as though our domestic production of the commodity was a unit all of it affected alike by any tariff change. Only for a few commodities will that viewpoint give a true picture of the situation, though it is hard to say how far we can hope to go in analyzing the more detailed relationships even when data are more plentiful than they now are. The bricks necessary to a complete mosaic picture of the situation will include knowledge of the demand schedules of various products both by areas and by grades and qualities. They will include better knowledge of the supply curves, also by areas and by grades and qualities, at least for some commodities. For example, the tariff on wool is having an important effect upon the types of wool used; a consideration of the tariff on wheat without reference to the kinds of wheat is almost meaningless.

With better knowledge of these supply curves and demand schedules of various kinds, it is probable that supply curves and demand schedules for the country as a whole can be developed with some prospect that our interpretation of them will have a reasonable degree of significance. To illustrate, flax production may have as its alternative in one area the use of the land for grazing purposes. The margin of profitableness between it and its nearest competitor being rather wide, the supply here, within a given range of prices, will be rather rigid. In another area, flax may have a close competitor in some other crop,

and its supply may be highly changeable. If the production of these two areas is brought in at different ranges of the supply curve, we may get a national supply curve which it is practically impossible to interpret without some knowledge of these component parts of it.

Not only is better knowledge needed as to the demand schedule as of a given time, but eventually it is to be hoped that inductive study will be possible in connection with the third dimensional movement of the demand schedule as described by Dr. Ezekiel.¹ Much confusion can easily appear in the interpretation of elasticity of demand if a movement of the demand schedule as a whole is occurring. As a matter of fact most statistical approximations of the demand curve must be made up from observations taken over a period of time instead of at a given instant. This is well illustrated in the case of sugar where the demand schedule itself has been shifting to such an extent as to lead some to conclude that the demand schedule for any given time shows a high elasticity which probably is not the case.

Difficult as this approach to the problem appears and inadequate as the data now are, it seems about the only approach that offers very much promise. Fortunately, the bricks, once made, have a great variety of uses, and can be reassembled in different forms for the analysis of other and similar problems such as marketing problems, production adjustment, etc. For example, the problems presented in estimating the effects of tariffs are very similar to the problems raised in studying the effects of freight rate changes. The main differences lie in the limitations of action and in the complications introduced by the international exchange and finance aspects. With these aside, when we impose an effective tariff, we increase the economic distance of certain portions of our source of supply. Tariffs can ordinarily be applied or removed more arbitrarily, than can freight rate changes and thus are likely to show more drastic changes. Because of this they may contribute to our knowledge of the effects of freight rate changes. In either case, the initial price change will need to be followed through a period of time to determine its effect upon demand, its effect upon supply; and, in turn, the effects of these changed supplies and demands upon the price itself. It is, of course, too much to expect that these readjustments can ever be followed out in minute detail, but we may perhaps hope that methods will be developed for determining the more important relationships. If the effects of changes occurred at once and without friction the problem would be much simplified. As it is, we know far too little of the immediate and long time effects of any given price change. Also, we know so little about the non-monetary factors that influence producers' actions and about the production changes which are not the result of conscious producer action that a better knowledge of these aspects of supply change is greatly needed. Dr. Black has indicated this problem in an earlier article.²

In spite of the obvious difficulties of even a deductive analysis of economic dynamics which were so clearly indicated in yesterday afternoon's discussion by members of the American Economic Association, I am disposed to hold with those who believe that progress can be made through a combination of

¹ Ezekiel, M. "Statistical Analysis and the Laws of Price." *Quarterly Journ. Econ.*, Feb., 1928.

² The Elasticity of Supply of Farm Products. *JOUR. FARM. ECON.*, April, 1924.

inductive and deductive methods such as has, as yet, scarcely been applied to these problems. It would seem that we have in this, as in many other economic problems, attempted quantitative analysis before we have developed the necessary qualitative procedure. Those who are familiar with chemical analysis will readily appreciate the futility implied by this analogy.

If this above viewpoint is a justifiable one, is not our first needed step that of developing a much more thorough, careful, and detailed qualitative analysis for the purpose of creating an hypothetical framework which we may test out statistically wherever suitable data can be obtained; an hypothesis which can be applied with a better probability of scientifically correct results than are now possible of attainment. That such an analysis is qualitative does not necessarily preclude it from being inductive. We may be able to discern, by inductive methods, the direction and nature of a response or action without being able to measure it quantitatively. It is, of course, essential that qualitative analysis of this kind be done only by highly skilled workers if it is to have any value. Qualitative analysis by the unskilled is freely provided by every protectionist and free-trader, usually without very noticeable accretion to the sum of human knowledge.

Following procedure along these lines, there is, of course, considerable danger that quantitative data will be brought together by unskilled workers with a view to proving the hypothesis set up rather than to testing its agreement with the facts. In a subject so prone to bias, the scientific worker must, of course, be on guard against it.

Professor Mills said yesterday that a theory should not have more unity than the data which it seeks to explain. If he would change the word "*data*" to *events* or *changes*, many more of us would find ourselves in agreement with his statement. The real changes occurring during any period undoubtedly exhibit more completeness and consistency than do the data we are able to assemble concerning them. For the present, and probably for a good while to come, we cannot hope to secure quantitative data sufficient to give us more than a glimpse here and there of the complex adjustments which grow out of dynamic changes such as those under discussion. In view of this, it would seem that we are warranted in building up a more consistent theoretical analysis than such data as we now have will fully bear out. Statistics, in themselves, prove nothing as to causation, but, if we can arrange them to find whether or not they fit into a previously developed hypothesis, we can test to some extent the correctness of this hypothesis. It would seem that Messrs. Ezekiel, H. Working, E. Working, Carver, and Black have given us a start in these methods of approach which is worthy of further development, difficult though the process may be. It is probable that, with further development along these lines, data better suited to such uses will become available, procedure will be simplified, and the problems may prove less difficult than they now seem.

Until such detailed and comprehensive studies are made, by commodities, by areas, by qualities, etc., such general surveys as have been presented in Dr. Black's "*Agricultural Reform*" and in the studies by Professors Hibbard, Commons, and Perlman will prove helpful as a basis for policy whenever we come to have a recognizable policy. It is to be expected, however, that thorough

studies commodity by commodity and area by area, will modify and possibly change some of the conclusions advanced in these studies.

This discussion may imply a formality of attack that the shifting and apparently uncertain reactions of the various elements of the situations do not warrant. No doubt this is true as to many of the less important repercussions. However, some of the major features of localized supply and demand curves, as developed in some of the current studies seem to indicate a rather surprising stability. At least it would seem that the whole problem offers sufficient prospect of yielding, through these methods, further knowledge than we now have to be worth at least an earnest effort to put tariff studies onto a more scientific basis.

DISCUSSION BY PHILIP G. WRIGHT

INSTITUTE OF ECONOMICS

People sometimes suppose that a protective tariff is framed in accordance with some abstract principle of national welfare, that there is some rate on every article which is, so to speak, the ideal rate and that this rate may be scientifically discovered. It is further supposed that it is the function of Congress to find such rates and thereby complete a tariff act, well-rounded and perfectly adjusted to the Nation's good.

This is not the way a tariff act is constructed. Some years ago when I was connected with the Tariff Commission I was frequently called to the Capitol to advise with members of Congress with respect to commodities on which I was supposed to be an expert. In listening to the debates a fantastic picture presented itself to my mind. I seemed to see wires connecting the lips and arms of the speakers and radiating out from the Capitol like the spokes of a spider's web and terminating each in the head office of some great business interest. The manager worked the wires.

One's first reaction to this picture is to see Congress as a ridiculous puppet show. Further reflection shows that the thing implied is not ridiculous. It is representative government. Members of Congress conceive it their duty to represent the interests of their constituents. I remember overhearing a Senator from a great State ask the Chairman of the Finance Committee to put through a duty of 60 per cent on a certain product. He said that one of his "big bosses" was at the Capitol and demanded that rate. He went on to say that if he could not get it he would lose a thousand votes and the election was going to be close. I remember also an interesting debate in the Senate. Senator Gooding of Idaho was defending a high duty on wool. He had been attacked in the press for his action. He was a ranchman and it was alleged that in working for a high duty he was guilty of an impropriety in thus using his public position to advance his own interest. Hence the Senator was not only defending the high duty but also the propriety of his own action in so doing. The situation aroused considerable debate. There was some difference of opinion but the prevailing sentiment was that it was the duty of a Senator to represent a great interest of his State even though he might himself have a pecuniary interest in the result—at any rate it was purely a matter of individual conscience.

The point is this: a protective duty—if it has any effect at all—brings about a domestic price higher than it would have been without the duty. This higher price benefits producers of the protected article. The securing of a duty, therefore, becomes as much a part of the private business of the beneficiary as the hiring of a salesman or the purchase of a labor saving machine. He therefore uses his position—usually a commanding one in his community—to secure the nomination and election to Congress of men who will represent his interests and then he follows up their conduct and their votes after election. He hires a lobbyist, and through the organs of public opinion endeavors to “sell” the idea that protection is a patriotic thing and a beneficial thing to the country at large.

Men enter Congress, therefore, feeling themselves charged with the duty of helping certain private interests by means of protective duties. But the duty which benefits a producer by raising the price of an article sold, by the same token burdens a consumer by raising the price of an article bought. The finished products of one producer are the raw materials of another. Moreover, a great many people are not directly benefited at all. It follows that when a bill is in committee or before Congress it is subjected, with respect to the rates contained in it, to a great number of conflicting pressures. The function of Congress therefore is in practice not to frame a tariff bill in accordance with some ideal economic principle, whether called free trade or protection or a tariff for revenue, but to effect the best attainable adjustment among a vast number of conflicting pressures. It is to pluck the goose with the least cackling. As in mechanics, when a ball is subjected to pressures in various directions, the resultant path will be most nearly in the line of greatest pressure.

I have no illusions that so long as a tariff act is framed by a representative body, like Congress, it will be framed on any other “principle”. But if all people know what their interests are and make use of such pressures as they can exert to obtain them, it is possible that the benefits and burdens may be more equitably distributed. At present as compared with the whole population the number who benefit are small and the number who suffer are great, but the benefit is concentrated and may be considerable to an individual while the burden is widely diffused and no single individual is greatly affected—many are hardly aware that they are burdened at all. Yet in the aggregate the burden greatly outweighs the benefit.

This statement may be illustrated by sugar. Because of the duty of 1.76 cents per pound on Cuban sugar the price of sugar is higher than it would be without the duty. The benefit of this higher price goes first to the sugar manufacturer and a part of it then filters through to the farmer in the form of a higher price for his cane or beets than he would otherwise receive. I have estimated that the maximum benefit which the beet grower can receive from the sugar duty is \$24 per acre. This estimate is based on the assumption that without the duty he would still grow beets and accept the price which the sugar factory would then be able to pay. But long before the price had fallen to that figure the farmer would cease to grow beets; he would make more from some other crop. Hence the only gain to the beet grower that can be attributed to the tariff is the difference between his profit per acre derived from beets and his profit per acre derived from the best alternative crop. This

may be only a few dollars or nothing at all. Yet even if the benefit were \$24 per acre the aggregate burden on farmers as a whole resulting from the sugar duty would greatly exceed the benefit. This is because the number of farmers who grow beets and cane is very small compared with the number who do not. For every 5 farmers who are benefited about 995 are burdened. Those farmers who do not grow beets are virtually assessed a tribute of some five or six dollars a year per family, amounting in all to about \$38,437,000 in order to increase the incomes of those who do grow beets by some \$18,816,000 and this burden is definite and inescapable so long as the duty remains (unless the farmers forego eating sugar) whereas, as just noted, the estimated benefit is a maximum. The actual benefit is much less than the figure given. But since the relatively few farmers who do benefit, benefit considerably they find that it pays them to employ a lobby and bring other forms of pressure to bear on Congress in favor of the sugar duty, and, like the manufacturing interests, endeavor to "sell" the idea to their fellow farmers. They endeavor to persuade them that what is good for themselves in good for the others also. The others not having any great individual interest at stake are easily "sold."

What is said of sugar cane in its essentials be said of flaxseed, wool, spring wheat, and a comparatively few other agricultural products whose prices are affected by the tariff. Most agricultural products are affected in price but little or not at all. Nevertheless even such products are generally dutiable because the manufacturing interests, that do benefit by the tariff, concede duties on them as a part of their campaign of education in "selling" protection to the people. These agricultural duties do them no harm, and, while they do the farmers no good, they may keep them contented.

From what has been said it is apparent that the tariff is fully as much a political question as an economic question and that so long as representative government remains it will continue to be a political question. This is not to be deplored. Aside from its bearing on individual incomes, our tariff policy has definite effects in shaping the character of our national life. It is a legitimate political issue. What is to be deplored is that such a dust cloud has been thrown about the issues involved; there is so much ignorance as to what results the tariff can effect and what it cannot, that the masses of the people do not know what their interests really are and hence exert only uncertain, spasmodic, and ineffective pressures to attain them. What is needed is education. The papers that have been read here today by Professor Hibbard and Professor Black are highly illuminating. It would have been of inestimable benefit to every farmer in the country if he could have heard them. These papers, however, are only excerpts from more extended studies which they have made and these studies are available and should be carefully read. In addition to these studies I hope it is not out of place to mention the studies made by the Brookings Institution. These studies deal specifically with the tariff in relation to certain agricultural products, and have been appearing during the past seven years. Every effort has been taken to make them accurate and dispassionate. One of them deals with sugar, another with wool, another with cattle and beef, and another with the animal and vegetable oils, including cottonseed, linseed, cocoanut, peanut, soya bean, and olive oils and butter. Another study, on wheat, is in course of preparation. These studies endeavor to

show just what benefits farmers receive from the duties on these products, and what burden is imposed. Another publication of the Brookings Institution ought also to be mentioned in this connection. It is *Making the Tariff in the United States*, by Thomas Walker Page, formerly Chairman of the United States Tariff Commission.

My plea in these remarks is not in the nature of a complaint that certain individuals through a lobby press their interests on Congress. My plea is rather that farmers, wage earners, merchants, and everybody else penetrate the dust cloud which envelopes the tariff, find out what their interests really are, and use their political power to obtain them. I said that the tariff was a resultant of conflicting pressures. If everybody knows what his interest is and presses to attain it the resultant may be a path more in the direction of the general good than it now is.

A PROGRAM FOR THE IMPROVEMENT AND ELABORATION OF DATA NEEDED FOR COM-MODITY PRICE FORECASTING

O. C. STINE

BUREAU OF AGRICULTURAL ECONOMICS

I know that some of you do not believe in price forecasting. But many of us are engaged in aiding producers to adjust production to demand and in deciding when and how to market; or in aiding distributors and consumers to decide when to buy. We are trying to make some practical use of economic theory and statistics. Whether we acknowledge it or not, we are forecasting or aiding our employers to forecast prices.

Enough is known about prices to enable competent analysts to make price forecasts sufficiently accurate to be useful in planning production, marketing, consumption, or buying, to the advantage of the producer, the distributor, or the consumer. Whenever it is possible by such means to bring about a more accurate adjustment of prices to fundamental supply and demand conditions, the producer, the distributor and the consumer may all profit through the elimination of economic wastes. These two propositions are re-phrased from the conclusion of the paper read last year at the meeting of the Farm Economic Association on "Progress in Price Analysis and an Appraisal of Success in Price Forecasting."¹ I am restating these two propositions as my justification for advocating great care and large expenditures in the collection and analysis of data as to production, prices, and consumption of commodities, for use in price forecasting.

The subject assigned to me seems to be comprehensive as to the commodities to be considered, but lack of knowledge of non-agricultural commodities makes it necessary for me to confine my discussion to agricultural commodities.

Paper read at a joint meeting of the American Farm Economic Association, the American Statistical Association and the American Economic Association, at Washington, D.C., December 28, 1929.

¹ Stine, O. C. JOURNAL OF FARM ECONOMICS, Vol. XI, No. 1, Jan., 1929. p. 128-140.

As a basis for price forecasting we need and must have greater precision in price analysis. Availability and character of data largely determine what can be done. The economic statistician can not make bricks without straw, the opinion of many to the contrary notwithstanding. Although we have a great mass of commodity statistics, the analyst is always confronted with the need of something more or better. The statistics of cotton are probably more complete and more reliable than those of any other agricultural commodity of major importance in the United States, but the analyst still finds need of more and better cotton data. For a forecast of prices early in the season to aid farmers in planning the marketing of their cotton crop, an analyst would want a more prompt and more complete survey of the carry-over of American cotton in foreign countries, more information about the quantity and quality of the production of foreign cotton, more data as to cotton consumed by industries, as to prospective industrial demand at home and abroad, and as to the volume and character of trading on the cotton exchanges. For most commodities the need for more and better data is much greater than in the case of cotton, and in many such cases a request or demand for price forecasts is literally a demand for bricks to be made without straw or clay.

It would be impossible for me to deal with all agricultural commodities or even with the important commodities in detail. It is commonly said that prices are determined by supply and demand. Perhaps I can review the field in a more satisfactory manner by dividing it into three parts,—supply, demand, and prices, and reviewing each in turn.

Let us consider first supply data, including production, carry-over, stocks, shipments, and receipts. As a basis for forecasting the prices of a commodity on a given market, we need to forecast the supplies bearing upon that market, and also need representative and comparable series for a period long enough to establish the relationship between supplies and prices. Of course, I need not tell you, but only remind you, that each commodity presents peculiar problems in determining what supplies are related to the market and to the prices to be forecasted.

For some commodities we have world-wide markets. A forecast of wheat prices for the season requires a consideration of world supplies, including the crop and carry-over, and the prospects for supplies for the next season. Adjusting the forecast to a market in the United States requires a fairly accurate estimate of the supplies most closely related to the specific market. In making a forecast of the course of prices during the season or of the price at any time or for a short period in the season, the location of supplies and the movement of wheat in relation to the market become important. A price forecasting service on a commodity such as wheat, therefore, involves a comprehensive collection of data as to world production, stocks, receipts at principal markets, and any other available data as to the volume and rate of movement from producing areas.

To provide the basis for a program of marketing the wheat crop of the United States we need an accounting of world stocks as of July 1, and the best possible forecast of production for the season. Outside of the United States, only Canada makes a comprehensive survey of stocks and that not until at the end of August. Many of the countries harvesting in July or August make no forecasts or estimates until after the harvesting is over or nearly over. The trade makes forecasts but in many cases these forecasts are based upon limited observations and superficial information. The official forecasts and estimates also need improvement. In June of 1928, for example, all available information indicated a world wheat crop somewhat less than the crop of the previous season, and certainly no greater. It followed, however, that throughout the season forecasts and estimates were continually increased. The winter wheat crop of the United States turned out to be 68,000,000 bushels, or 13 per cent, in excess of the June forecast, and the world crop turned out to be 8 per cent greater than that of the previous year. The result, of course, was a considerable reduction in price from what might have been expected on the basis of early crop forecasts.

The want of data with reference to the production of some classes of livestock and livestock products is even greater than in the case of crops. For example, we have a great in-

terest in the world wool situation, but for no country do we have a forecast of production and for very few countries do we have a satisfactory historical series of estimates of production. Stocks, except at a few important points, are unknown. A program for the improvement of supply data for use in forecasting prices of wool requires in the first place more accurate estimates of the number of sheep that produce wool, information as to conditions that effect the production per sheep, forecasts and estimates of production of wool, and periodically, fairly complete surveys of wool stocks throughout the world. While the need for world-wide data as to the production and stocks of butter, beef, and pork may not be quite so pressing as that for wool, in each case there is room for a great improvement in data as a basis for forecasting prices of these commodities in the markets of the United States.

We need a world-wide crop and livestock reporting service. If the International Institute of Agriculture would function to develop in every important producing country an accurate census and fairly accurate annual censuses or estimates of crop areas, numbers of livestock, and production, scientific methods of forecasting production as early in the season as it is possible to determine with a fair degree of accuracy the probable outturn, and a fairly complete annual or frequent survey of stocks; it would perform a great service for the statistician who has to deal with products having a world-wide market. This production estimating service, of course, should be supplemented by the collection of reliable data as to market receipts, and other indications of the movement of supplies from producer to consumer.

To the extent that foreign countries and the International Institute of Agriculture fail to meet our needs, the United States Department of Agriculture must try to make up the deficiency. The Department has made some progress in forecasting crops in foreign countries. Analyses of the relation of weather conditions to yields in Argentina, Australia, and Canada have been used in the present season to forecast the crops in these countries well in advance of the harvest. A beginning is being made also at forecasting hog production in some north European countries. This work

needs to be extended to other countries and other commodities and it should be supplemented by reports from trained observers placed in foreign countries to function as State crop estimators function in the United States.

As citizens of the United States, we boast of the most comprehensive census and the best crop-reporting service in the world. But when we submit the results of our censuses, our estimates, and forecasts of production to the test of utility in forecasting prices, we find a need for great improvement in our own data. The forecasts of production in the United States are as a rule early enough to be useful in planning the marketing of crops. Other commodities need to be added to the crop forecasting list, and the early forecasts need to be made more accurate indications of the final outturn of production. The Department of Agriculture is willing to extend its crop forecasting list to the limit of available funds and to improve the accuracy of the early forecasts as much as possible. The same may be said about the annual estimates of production. These annual estimates and forecasts are based upon censuses and other indications of, or checks upon, production. In every direction we find room for improvement in estimates and even in censuses.

I wish to call attention particularly to the need of revising historical production series for use in determining the relation between supply and price. Holbrook Working of the Food Research Institute made a thorough analysis of the estimates of wheat production over a series of years and concluded that whereas in recent years the final estimates have been fairly accurate, in the period prior to 1902 both the estimates of production and the censuses were probably considerably below the actual production. Taking 1899, for example, the original official estimate of wheat production was 547,000,000 bushels and this was subsequently revised to 636,000,000. The census reported 659,000,000, but Working, on the basis of mill grinding and other indications of available supplies, concludes that the production of that year was probably 682,000,000 bushels, 22,000,000 in excess of the census figure and 135,000,000 in excess of the first estimate. One of the principal reasons for this first estimate being so far off was that the previous census upon which estimates

for the decade had been based was also too low. Dr. Working estimates that the production of 1889 was probably 618,000,000 bushels, but the census reported only 468,000,000.²

It is more difficult to count or estimate potatoes than wheat, and many forecasters have stumbled on defective potato production data. The production of potatoes in 1924 was estimated to be 455,000,000 bushels. This was subsequently reduced to 422,000,000, but the census found only 352,000,000 bushels. What was the production of potatoes in 1924? This is enough to point the finger straight at the need of revising past data and making plans for improving both census-taking and estimating.

Improvements in production data in the United States require first of all a more careful consideration of the problems involved in obtaining accurate censuses. The census is or ought to be the starting point for estimating production for the decade, but an incomplete or inaccurate census can not be accepted as a proper basis for estimates. Both the census findings and estimates must be checked by data from all other available sources in determining how to use them. The need for accuracy requires greater care in formulating questions, taking the census, and editing and tabulating the schedules.

Improvement in estimates requires greater care in securing comparable and representative reports and constantly checking preliminary estimates with data from every possible source as to the disposition or movement of the product. Furthermore, the estimator ought not to stop with the revision of his data after he has left it behind him past a census. For time series the estimates between censuses must be revised backwards. The final estimates for any period ought to be based upon the censuses both at the beginning and the end of the period. Improvement of the annual estimates for a series of years, to be used in the analysis of prices as to basis for forecasting, therefore, requires some thoroughgoing research to revise production estimates and censuses for a period of years long enough to give proper basis for determining trends and cycles in production and

² Working, Holbrook. *Wheat Acreage and Production in the United States Since 1866*. Wheat Studies of the Food Research Institute, Vol. II, No. 7. June, 1926.

provide a reliable measure of the relationship between supplies and prices.

You may ask how long the series should be. The proper or necessary length of the series will differ to some extent and must be determined in each case. As a rule a short-time series, five to ten years, is an unsafe basis for making forecasts. In the case of cattle, sixteen or more years are required to establish one cycle, and we ought to have at least three, which would require a period of about fifty years for which we ought to have comparable production data.

Forecasting prices of livestock presents many supply data problems in addition to those encountered in attempting to forecast the prices of crops. In the first place, a series of annual estimates of production are wanting for most livestock products, and there are no forecasts of production excepting what may be made from intentions to breed sows or the numbers of livestock on farms. Furthermore, shifting census dates and changing forms of questions tend to destroy the comparability of the data as to the numbers of animals on farms through the past decades. The price analyst who is preparing his slate of Christmas wishes might well include—

(1) A request that Congress decide upon a time in the season for taking a census when the best census can be taken, and hereafter take all census as of the same time in the season;

(2) That the census takers and their advisers formulate their questions as to numbers of livestock and the production so that the results for the different censuses will have as high a degree of comparability as it is possible to obtain through care in formulating comparable questions;

(3) That the annual estimates of livestock then be adjusted to the census base;

(4) That the livestock production, including meat production from the total slaughter of animals, milk and its production, eggs and poultry be estimated annually, and in some cases even monthly if possible;

(5) That provision be made for forecasting production or marketing annually and monthly.

There would still remain the the problem of establishing comparable time series of production. This is almost hope-

less but patient research could accomplish something in reconstructing production series from numbers of animals, slaughterings and receipts at markets. In the meantime we must stumble along and do the best we can with the available data.

So far I have spoken only of total production. In most cases it is necessary to have data as to production by types and classes of a commodity. In the case of tobacco, for example, there are many types which must be treated separately. There is not much more relationship between the flue-cured tobacco of North Carolina and the cigar binder tobacco of Connecticut than there is between apples and potatoes. The five major classes of wheat need to be treated separately. The prices of the different classes of wool do not move together. Supplies of long and short staple cotton ought to be estimated separately. Analysis of cattle prices could be greatly facilitated by more data as to the number of animals marketed or to be marketed by important classes. Particularly desirable are accurate estimates of numbers of cattle on feed and forecasts of numbers that may be available for the feed lot. The Department of Agriculture recognizes the need of classifying supplies on the basis of market values or price relationships and some progress has been made in this direction.

Quality is also an important factor in determining prices, and analysts are beginning to emphasize this fact. I have been told by a tobacco man that it would be impossible to forecast the prices of tobacco because of the importance of quality in determining price. One of the first problems of the tobacco analyst, therefore, is to find some measure or index of quality and then establish some basis for forecasting quality. The Tobacco Division of the Department of Agriculture is beginning to secure information as to quality. We are still without a historical basis for determining the relation of quality to price, but research of the records of tobacco merchants may yet reveal some basis for determining variations in quality over a period of years. At any rate in the future we shall have from the Department of Agriculture some index of variations in quality.

Quality must be taken into account in forecasting the prices of other commodities, even though it may be less im-

portant in some cases than in the case of tobacco. Dr. Waugh has called attention to the importance of quality in determining the price of certain fruits and vegetables.³ In all such cases the forecasting of prices must take into account the quality factor. In many cases quality seems to be an intangible matter which can be measured only indirectly. It is probable, however, that some basis can be found for indicating quality in connection with each commodity. In some cases it is possible that quality indices can be developed better by market inspectors than by producers and crop estimators.

It seems to me that here is a field in which the market news and inspection services can render the analyst a real service. The grain and cotton inspection services provide quantity measures of quality. Why not others?

Thus far I have dealt with national and international estimates of supplies: The price that the local producer may obtain in his local market may be determined in large part by local supplies. There ought to be a place in the economic program of every State for making studies of the relation of producers to their markets, and translating national and international forecasts, that may be made, into their probable effects upon local prices. For this purpose more careful attention needs to be given to State and county estimates of production.

We have worked so much with the relation of production to price that we are inclined to forget at times the importance of the consumer and his purchasing power or his demand in determining price. Data as to actual consumption of agricultural commodities are about as scarce as hens' teeth. Our knowledge of consumption for the most part is limited to what may be derived from data as to production, imports, and exports. In the case of cotton and wheat we have fairly complete data as to mill consumption. Some manufacturers report wool consumption but others do not. We have periodically a manufacturer's census but with a few exceptions it is only recently that manufacturers have been required to report the quantities of materials used. Perhaps in the future

³ Waugh, Frederick V. *Quality as a Determinant of Vegetable Prices*. . . . 1929.

we can have even more data from manufacturers as to the volume of raw materials used in manufacturing. But this is only the first step toward the final consumer and we need to get closer to him.

Estimates of consumption for the United States as a whole are not sufficient. We need estimates by regions, States and cities. To illustrate, the South consumes large quantities of pork and pork products. What will be the effect of a depression in income from cotton upon the demand for hogs? To answer the question we need some measure of what the South consumes. We need historical data, but that is practically out of the question except by inference from general knowledge of the character of the products consumed by the South and the effect of cotton depressions upon the prices of these products in relation to prices of pork products.

Recently we have noted an apparent marked falling off in the demand for butter. From an analysis of available data we know that the demand for butter is associated with factory payrolls. We have a fairly definite index of payrolls but not a very satisfactory index of consumption. We have no means of locating consumption either geographically or by classes of consumers. If we could do this, we might in the future analyze probable changes in payrolls and indicate where and how much butter consumption might be affected.

For more precise analysis or forecasts of demand we must have data as to consumption by population or income groups. We know that New York consumes a very large quantity of oranges. The effect of changes in supply or of industrial and financial conditions upon prices and consumption of oranges in New York will depend to some extent upon who consumes oranges and the elasticity of the demand of the several classes of consumers. At present an analysis of consumption by population and income groups can be made only upon the basis of special surveys which classify consumers and obtain estimates of consumption by these classes at various prices. Such studies seem likely to prove fruitful sources of data for determining the relation of consumption to price.

Highly specialized local surveys, however, are a slow

method of accumulating data as to the consumption of commodities. The Bureau of Labor Statistics has done some good work in this field, and its activities ought to be extended. The survey of food consumption per capita made in 1918 or 1919 ought to be repeated and elaborated so as to show per capita consumption of important commodities by sections of the United States, regions, and localities, and, if possible, by income groups.⁴ If the Bureau of Labor Statistics continues to limit its activities to the collection of data in cities, some other agency, possibly the Department of Agriculture, should undertake to supplement these data by collecting similar and comparable data as to rural consumption.

In considering consumption and demand, we must not overlook the fact that a considerable percentage of the commodities produced in this country are consumed abroad. This calls for the collection of data as to consumption and factors that affect the consumption of our products in foreign countries as well as in the United States.

Price data seem to be abundant. We have more of this kind of stuff than of anything else, but the analyst frequently finds that his price data are inaccurate, poorly defined, or not specifically enough related to the commodity or market with which he is concerned. The price reporter, the price collector, and the price analyst need to get closer together to remedy these defects.

We need more data as to the prices of some commodities in foreign markets, and in localities between the producer or the consumer and the wholesale market. Time will not permit me to dwell at length upon a program for the collection of more and better price data, but I do want to say a few words about retail prices.

In measuring demand we must use retail prices in relation to consumption. The use of wholesale market prices may give misleading results because the spread between the retail and wholesale price of a commodity is not a constant proportion of the retail price. The available price data are collected mainly for the purpose of constructing index numbers of the cost of living. The price analyst has not used

⁴Cost of Living in the United States. Bulletin of the U. S. Bureau of Labor Statistics. No. 357, May, 1924.

them for all that they are worth, but when he turns to their use he will find that they also need improvement for his purpose. He will want more data and with more specific descriptions as to just what they represent.

Since one of the first steps taken in price analysis is to deflate the actual price to some common base, it is desirable to give some consideration to the character of the deflator to be used. Suppose, for example, we want a deflator which represents as accurately as possible changes in general price level, independent of other price factors. Let me set up two requirements: First, it shall be as free as possible from the effects of shifts and changes in the supply or demand for specific goods or services. Second, that it shall represent competitive prices as free as possible from the stabilizing influences of monopoly, custom, or contract. I believe that these are reasonable requirements. Have we a deflator that meets these requirements? I know that I am treading on dangerous ground in questioning the universal value of some of our best known index numbers. Of course, for rough analysis almost any good general index number may be satisfactory. I merely want to suggest that precise analysis requires care in the selection of the proper price index series to be used, and that perhaps we need more and better general price indices.

Now let me conclude by saying that the lack of adequate information in the hands of producers and the want of a sound basis for interpreting facts are in large measure responsible for recurring cycles of over—and under-production and the unwise marketing of commodities. The effects of maladjustments in production extend far beyond the producer, for the recurrence of these maladjustments increases the cost of distribution and creates economic disturbances that are carried through our whole economic system. The first step in remedying the situation is in the compilation of comprehensive data as to production, consumption and prices, and information as to other factors that may affect prices, as a basis for interpreting the current and prospective situations to producers, distributors and consumers, who are concerned. The most effective interpretation of these data is in terms of prices and the man who plans his business for tomorrow must have price forecasts.

EVALUATION OF METHODS USED IN COMMODITY PRICE FORECASTING

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In this paper I do not propose to evaluate the various methods used in price forecasting in the sense of trying to grade or rate them according to some scale of merit. Such a procedure would not be warranted for we have neither a satisfactory classification of methods nor a satisfactory measure of the merit of these methods. I do propose, however, to discuss certain points which are important to anyone who must evaluate the methods that may be used in attacking a certain problem or who must evaluate the reliability of forecasts that have been made by various methods. In a measure, any such discussion must evaluate certain methods, but it should always be borne in mind that the goodness of any method of attacking a problem depends in part upon the problem itself, in much the same way that the goodness of a cutting tool depends in part upon the nature of the material to be cut. A certain method may be satisfactory for forecasting month-to-month changes in the price of eggs, yet not be satisfactory for forecast either the month-to-month or year-to-year changes in the price of wheat. A butcher's cleaver may be ever so good a tool, yet it would not be satisfactory for making a haircut.

Perhaps I should say now that my studies in price forecasting have been confined chiefly to agricultural commodities; it is these commodities that I have in mind in this discussion. Procedures that may be used with a fair degree of success in forecasting the prices of many agricultural products are likely to be useless when applied to forecasting the prices of products of mines and factories—at least it is reasonable to suppose that such would be the case. However, the major considerations that enter into the evaluation of methods used in forecasting the prices of agricultural commodities must also enter into the evaluation of methods used to forecast prices of other sorts of commodities.

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If we are to evaluate methods of price forecasting, the first question that arises is that of the basis of evaluation. To those who are statistically minded it may at first appear that the proper procedure would be to collect as many commodity price forecasts as possible, to classify them according to methods used in making them, and then to determine the average percentage of error, or make some other measure of the average error of forecasts that have been made by different methods. Such a procedure, would meet with difficulties that would render its results altogether worthless. The first difficulty would be that of satisfactory classification of methods. Second, most forecasts of commodity prices are made in such a way as to render precise measurement of their degree of accuracy impossible. Third, the accuracy of forecasts depends upon many factors other than the methods used in arriving at them. It depends, for example, upon the ability and training of the forecaster, upon the time he has devoted to making the forecast, upon the assistance he has had, and upon the inherent difficulty involved in making the particular forecasts. For most of these factors upon which the accuracy of forecasts depends we do not have quantitative measures—indeed quantitative measures of many of them are impossible to obtain. Consequently the merit of different methods of forecasting cannot reliably be judged by our records of past performance of forecasts.

Perhaps some illustrations will help to clear up this point. It is one thing to forecast the change that will take place in the price of eggs from February to May. It is quite another thing to forecast how the price of wheat or cotton will change in the same period. A method that has been very successful in forecasting such changes in egg prices is not necessarily to be judged as better than another method that has been rather unsuccessful in making similar forecasts of wheat or cotton prices. Likewise, because an inexperienced student who uses methods of multiple correlation, fails while an experienced dealer who uses "market judgment" succeeds in forecasting the trend of prices of some commodity, it does not follow that the student was using an inferior tool in his attempts at forecasting.

What may be called "batting averages" of price forecast-

ing, then, do not furnish us with the information necessary to make a worth-while statistical comparison of the relative merit of the different methods. We must consequently resort to a consideration of the question: On what grounds may a price forecast reasonably be made? From this we may then proceed to the consideration of how the methods in use measure up to the requirements which we deem necessary.

Even as it may be said that we can test our knowledge and analysis of the past by our ability to predict the future, so it may be said that our ability to predict the future may be judged by the completeness of our knowledge and analysis of the past. Satisfactory price forecasts can be made only if it is possible to arrive at fairly accurate quantitative measures of the effect of the principal factors which have influenced prices in the past. But in social phenomena it is impossible to measure the transmission of an impulse from cause to effect. We can measure only the objective magnitudes from which and to which the transmission occurs. From this it results that two rather distinct processes are involved in any method of forecasting. On the one hand, the quantitative relationships of co-variation as it has existed in the past must be measured. On the other hand, the significance of these relationships must be interpreted in terms of cause and effect if we are to have a sound basis of inference concerning the future.

I have used the words "cause" and "effect." In doing so I should perhaps indicate that I use them in the rather ordinary sense which implies the transmission of some sort of impulse. Of course it must be recognized that in the social sciences, at least, we have no complete or final knowledge concerning causation. Nevertheless, we are able to do much more than merely observe that certain things have happened in conjunction or in sequence. This involves a knowledge concerning the mechanism by which phenomena are related, and through such knowledge we are able to judge whether there is some fairly direct and necessary interrelation between phenomena or whether they are connected only by a rather devious and uncertain set of circumstances.

When we survey the methods used in price forecasting and classify them on the basis of how they measure the relationships of the past, we find wide variations. There are, first, those that cannot be said to employ any methodical statistical analysis; second, those that use informal methods of statistical analysis, and finally those that use formal statistical technique, including multiple correlation. As we pass from the first extreme to the last, we find that the quantitative measurement of relationships of the past steadily improves. What may be called the method of simple analogy makes little attempt to measure quantitatively the relationships of the past, and it provides no means of indicating how close an estimation of past prices can be made through the means by which it essays to predict the future. Informal statistical methods go somewhat further, in that they make rough quantitative measures of the co-variation of a few factors, and some of them are carried far enough to include a series of estimated prices for the period studied, and measures of the closeness of estimation. The highly refined methods of statistical technique provide for the precise measurement of relationships of co-variation between many different factors;¹ they provide for definite statements of the closeness with which these measurements estimate prices of the past, and they even give some indication of the extent to which these measures may be expected to be influenced by fluctuations of sampling. From the viewpoint of the adequacy with which they measure co-variations, there can be no question but that the more refined statistical methods are the best.

It cannot be said, however, that the best methods of measurement of past relationships are regularly accompanied by the most satisfactory inferences concerning the future. Indeed, there seems to be some tendency for the price forecasters who use refined methods of statistical technique to be somewhat less careful or thorough than are others in making inferences from records of the past. This does not mean that all those who have used methods of multiple correlation have failed to make a serious attempt at a logical

¹ There are of course certain important limitations to the sort of relationships which they can be used to measure.

inference from their results. In many cases those who have used refined statistical technique have been most careful to make their inferences a distinct step in their process of forecasting, and they have made them with the utmost care. Such procedure, I believe, represents the highest development of price forecasting.

When no systematic statistical analysis is employed, there is ordinarily not the temptation to leave out the reasoned inference concerning the future. Thus, in what may be called forecasting by analogy, the study of conditions in past years does not yield any sort of definite measure of co-variation or "predicting equation." The investigator is constantly aware of the fact that he must apply the usual methods of argument in supporting his analogy. He is subject to attack by anyone who disagrees with his reasoning, and furthermore, in the absence of precise statistical measurements of how well his system would have worked out in the past, he is keenly conscious of the fact that he is dealing with matters of cause and effect, and that he must place his forecast upon this basis.

With the employment of systematic statistical analysis, even though it be of an informal nature, there comes the tendency to substitute the measurements of what has happened in the past for careful reasoning concerning what effect this or that factor will have upon price. Thus, it may be found that in the past ten years the price of a certain commodity has averaged ten cents higher in January than in December, and this may be taken to indicate that the price is likely to average that much higher in the current year. If there has been a rise in eight out of ten years, it is likely to be assumed that there are eight chances out of ten that such will be the case in the current year. The danger is that such conclusions may be reached without any inquiry as to whether there exists any particularly regularly recurring causal factor which could be responsible for such a rise.

As we pass to the use of the more formal and complicated statistical technique, the investigator is more and more likely to rely solely upon his statistical analysis. In part this is because the use of more precise methods of measurement engenders greater confidence in those measurements.

However, the very nature of the multiple correlation technique when used in price analysis is likely to make difficult the procedure of *a priori* analysis of its results. This is partly because of misunderstanding and doubt concerning the real meaning of certain of the statistical measures which are included in the correlation analysis. Furthermore, correlation analysis comprehends a fairly definite, standardized procedure which, if followed out with ingenuity and perseverance, will yield a "predicting equation" which gives close "estimates" of prices in past years, and this fact tends to make the investigator who is not inclined to reason things out carefully, accept the regressions which he obtains as being satisfactory formulas for price forecasting.

I believe it cannot be too strongly urged that the establishment of relationships of co-variation for a past period is not in itself satisfactory or sufficient basis for forecasting the future. The fact that the theory of sampling gives no valid ground for expecting statistical relationships of the past to hold true in the future has been pointed out repeatedly. Nevertheless, it appears that there continues to be widespread misunderstanding and disregard of the fact. The difficulty cannot be avoided by discarding the Pearsonian method of correlation and substituting some other new method of measuring co-variation, for the difficulty is one of sampling, not of the means of measuring co-variation.

Despite the failure of the theory of sampling to support it, the belief continues that the future can, to a degree at least, be foretold from the past. The belief is basically sound. It is based on our evidence of what we may call the uniformity of nature, without which everything would be chaotic. But we must be careful not to include too much in what we call the uniformity of nature. It is not a uniformity of any and all associated *occurrences*; rather it is a uniformity of *cause and effect*.

In order to forecast the future of commodity prices then, we must establish relationships of cause and effect between prices and causally important factors which antedate them. We must judge whether such relationships are fairly direct and certain or devious and uncertain. Any method of price forecasting which does not attempt to establish such rela-

tionships, or to show that such relationships are the outstanding ones which may be expected to affect the price in question, is a faulty method.

Perhaps many will throw up their hands and say: "If such be the case, it is hopeless to try to forecast prices." With such a sentiment I cannot agree. While I do agree that the nature of cause-and-effect relationships cannot be precisely determined, and price forecasts will in consequence fall short of being highly accurate, I think that much can be done to establish quantitatively the nature of cause-and-effect relationships.

If this is to be done, however, it is necessary that those who forecast prices recognize that their methods must include more than mere measurement of quantitative relationships of the past. It must be recognized that the forecaster's work is not finished when he obtains a regression equation which will closely "estimate" the desired price during a period of the past, but that the major part, or at least a major part, of his job is to show what inferences may be made from these relationships of a past period. The problem of inference from correlation results—whether they be the result of correlation by the Pearsonian method or whether they be the results of some other means of determining relationships of co-variation—must be recognized and squarely faced. The problem of inference must not be ignored by merely slipping over from showing how factors are numerically related to prices, to talking about how these same factors affect price.

An example may help to make this abstract discussion a little more concrete. Suppose we are studying the price of corn at Chicago with a view to forecasting corn prices and we want to be able to forecast the change that will occur in them from December to May. The first step is to consider what forces might cause prices to change in that period. As a result of our knowledge of economic theory and of the facts we have acquired concerning the production of corn and the uses to which it is put, we select a number of factors to correlate with the change in price from December to May of the past twenty or thirty years. Among these factors we include the size of the corn crop of a group of Southern

States on the theory that when the corn crop of those States is small they may, late in the spring, begin to buy corn from the Corn Belt, thereby raising the price above the early-season levels. After a time, by exercising considerable patience and ingenuity in setting up several correlations, we arrive at a fairly high coefficient of correlation. Now, if we are quite unwary or lack sufficient curiosity, we breathe a sigh of relief and say to our statistical clerk, "Use the regression equation of this correlation to estimate the May price." But if we are more careful we discover that with this regression or "forecasting" equation, the larger the crop in the Southern States the greater the estimated increase in price from December to May. What conclusions are we to derive from such a result?

Without further evidence the only conclusion which can properly be made from such a result is that we need to do some more work. Some may say, "But your facts are all right—the records of the past show that your theory was wrong. You have only to revise your theory. In your regression equation you have a dynamic statistical law of price."

Of course, there are times when the results of correlation may require us to change our economic theories. It is more likely, however, that the result of careful study will show that the particular relationship of co-variation does not express a direct causal relationship between the factors involved. Thus in the example under discussion it might be that the years in which crops of the group of Southern States were large were the years in which a relatively small proportion of the crop was produced in the areas of the Corn Belt from which corn is shipped to market—hence they were years in which market supplies were small relative to the total corn crop of the country, with the result that prices in May turned out to be higher than was expected early in the season. In any event no "forecasting formula" or regression curves should be considered satisfactory unless the results square with our reasoning based on economic theory.

I cannot lay down any infallible test which may be applied to determine whether or not in a particular forecast the

inference has been properly made and safeguarded. Much less can I indicate any definite rules for arriving at causal relationships. Here the economist will find in each individual case an individual problem which will tax his powers to the utmost. He must resort to every available means to discover the causal relations involved. A priori analysis and empirical knowledge may both be used, but it is necessary to a large extent to rely upon the logic of a priori analysis.

Though no definite rules can be laid down, certain points of the attack may be suggested. In any case two questions may be asked. First, does the regression equation represent reasonable and fairly direct causal relations? Second, is the same regression equation obtained if the time series is broken up into two or three periods of consecutive years and correlations run for each of those periods separately?

What constitutes a reasonable causal relation may, of course be open to question; but it should be easy to ascertain in most cases whether the regression equation expresses a relationship of the same general nature as the causal relation. Thus, if we are correlating various independent variables including supply with the price of a commodity, it should be evident, if the net regression of price on supply is positive, that the regression equation does not express the effect of supply on price and hence that we have not reached a satisfactory conclusion. Whether the amount of change of the dependent variable which is associated with unit changes of the various independents is reasonable for the causal relationship is a more difficult question, but one which should in any case be faced—not ignored.

When curvilinear correlation methods are used, especially those which involve the fitting of free-hand regression lines, there are special considerations which must not be overlooked. A curvilinear regression means that a given change in the independent variable is not always associated with the same change of the dependents but that the rate of change is dependent upon whether the value of the independent variable is large or small. Such relationships both of co-variation and of causal connection are common, but when the regression line has a point of inflection it should be

regarded with suspicion as being an unlikely sort of causal relationship. If the regression curve has a point of inflection, it cannot express the causal relation, unless the causal relation is such that as the independent factor increases its effect becomes first progressively greater and then progressively less—or vice versa. It is much more likely that the causal effect of a unit change of a variable will be either constant throughout its range or that its effect will change progressively in the same direction throughout its entire range.

Another possibility when curvilinear methods are used is that two or more values of the independent variable will be associated with the same value of the dependent.² This is to be looked upon with suspicion. Conditions where two different magnitudes of one factor make the same contribution to price, while at the same time intervening magnitudes make larger or smaller contributions, probably are rare. Hence, such regressions should be discarded unless there are good *a priori* grounds for believing that they express the causal relationship in the particular cases under consideration.

Fortunately the second question can be answered directly and positively. Though its answer may not give definite information as to whether the regressions express causal relations, it is always possible to test the data for stability within the limits of fluctuations of sampling. If the first half of a time series, when correlated, does not yield approximately the same regression equation as the second half, there is small reason to believe that the regression equation obtained by correlating the data of the entire period will express approximately the nature of co-variation of a future period. Certainly if the results for the two halves of the period and for the entire period are all significantly different we may feel certain that none of them can be relied upon to express direct causal relationship.³

If, on the other hand, the three regression equations obtained are substantially the same, a large measure of confidence may be had in them. It is true that such a condition

² Judging, that is from the net regression.

³ There is, of course, the remote possibility that the true causal relationships themselves have changed. If this be true, attempts to predict the future are futile.

does not prove that the relationships of co-variation which have been arrived at are those of cause-and-effect, but it does give evidence of stability of the conditions of co-variation of the factors studied, and this, in turn, is likely to be due to their being the true cause-and-effect relationships. Furthermore, if we are primarily interested in, predicting knowledge of stability is all that is required and the stability of the series in the past gives good promise of similar stability in the future. It should be noted that in testing for stability, it is stability of the regression equation which is important rather than stability of the coefficient of correlation.

In addition to the foregoing, there are many other tests of regression equations. For example, we may set up correlations in which the regression of one correlation may be used as a check against the regression of another. Suppose we set up a correlation which has the average price for a crop year as a dependent variable: we can set up two or three similar correlations using the prices of a single month of each year as the dependents—say the price in September and that in May. Comparing these may disclose that the differences between the various regressions are not those which could reasonably occur if the regressions really expressed causal relationships. For example, if serial time is used as an independent variable, the regression of price on time should not differ materially for each correlation. In addition, we can set up a correlation with the amount of change in price from September to May as a dependent variable, and the regression of this correlation may be examined to see whether the “explanation” of the change in price from September to May coincides with the differences in the prior “explanations” of the September and May prices.

As I have intimated before, I believe that one of the reasons why the use of multiple correlations methods has not been attended with even greater success is because of misunderstanding of certain measures which the multiple correlation technique includes. Coefficients of net determination for example and are often taken to measure the relative strength of influence of the various independent varia-

bles upon the dependent. This assumption is faulty, first, because it implies causal relationship, second, because these coefficients do not even indicate the importance of the various independent variables in their contribution to determining the "estimated" dependent variable. I fear that the time at my disposal does not permit any such lengthy discussion as would be necessary to prove this point. Nevertheless, I can indicate that for judging the relative importance of the independent variables in terms of their importance in making up the estimates and for help in determining whether variables should be excluded from a correlation or not, it is better to use what we term "path coefficients" (otherwise known as Betas) or some comparable measure of the importance of the independent variables. The path coefficient may be looked upon as simply a means of weighting the effect upon the estimate of a unit change in a given independent variable by a measure of the amount of variation which there has been in that variable. In case the correlation in question has arrived at causal relationships, it may then be said that the size of the path coefficient measures the relative magnitude of the total effect of each independent variable upon the dependent, whereas the coefficient of net determination measures only that part of the effect which is not cancelled out by the effect of some other factor.

Thus far I have taken little note of the fact that different sorts of price forecasts may be made, and that these different sorts of forecasts require proper adaptation of methods. Perhaps the two principal types of forecast which have been attempted can best be classified as forecasts of yearly average prices, and forecasts of the change from month to month (or from week to week) within a given season.

Let us consider first the seasonal forecasts. The seasonal movement in prices may be very important and the relationship between changes in price and the season of the year may be very close and depend upon such things as the production being affected by temperature and time of year. In such cases it is likely that price changes can be foretold with a considerable degree of accuracy by doing nothing more than determining the average or normal change in price from month to month and applying this to the par-

ticular year in question. Of course such forecasting, being simplicity itself, does not ordinarily give results which are of very great value. Any farmer knows that the price of eggs or butter is ordinarily higher in the fall and winter than in the spring or summer. The price forecaster has told him very little, if he has told him no more than this. However, if there is an essential difference between the types of seasonal movement depending upon the size of the yearly production or some other single factor, this can often be shown by relatively simple statistical methods, and if the relationships found can be shown to be the result of fairly direct causal sequences, such methods may provide the basis for very worth while forecasts.

In case of products where there is no very regular seasonal movement in price, it may be much more difficult to forecast month-to-month changes. These changes may be dependent upon the simultaneous effect of a considerable number of factors, and in such cases the use of some sort of multiple correlation method is almost imperative if worth while results are to be obtained. If there are a number of important factors which are effective at different times of the year, but only one or two of which operate simultaneously, more simple methods may be quite sufficient.

When seasonal average prices are to be forecast, it is almost always the case that there are many changing factors which have a greater or less importance in determining the average price. Sometimes only one or two of these factors will be of very great importance, and in such cases seasonal average prices can often be quite reliably forecast by the most simple sort of statistical method, properly interpreted. As the number of important factors become greater, however, the use of multiple correlation becomes almost imperative in order to systematically measure the nature of relationships in past years, and the more advanced methods of statistical technique must be used, together with very careful a priori reasoning in drawing inferences from the results of these correlations.

Methods of statistical analysis should also be in keeping with the nature of causal relationships involved in the data studied. Such considerations should determine whether

linear or curvilinear regressions are to be used, whether prices and quantities of the commodity may best be expressed in terms of natural numbers, logarithms, or reciprocals. They may also have an important bearing upon the nature of preliminary adjustments which should be made. For example, there may be a choice as to whether the series correlated should be in terms of percentage of trend, of deviations from trend, of first differences, or of link relatives. Where there is evidence that a given price tends to move up or down as a result of a causal "impulse" and then remain at whatever level it reaches until it is affected by another "impulse" there is especial reason for the use of first differences or link relatives. On the other hand, if there appears to be a tendency for prices to return to a normal, being deflected from this normal only during the existence of certain deflecting forces, the use of deviations from trend or percentage of trend is more reasonable. The latter situation is, I believe, the most usual one.

Attention should perhaps also be called to the requirement that methods of price forecasting should deal with the specific thing which it is desired to forecast. Thus, attempts have been made to forecast the trend of prices within a season on the basis of a forecasted yearly average price, it being assumed that if prices early in the season were below the level forecast, they would rise, while if they were higher early in the season they would fall. It should be noted that a fairly close forecast of the seasonal average may give a quite misleading impression if used in this way. Certainly the price trends of previous years should be studied carefully to determine what relationship early season prices have borne to the "estimated" seasonal average before such deductions are made. It would be better, however, to put reliance on a more direct method of forecasting the seasonal change. Two of these may be mentioned. The one involves a separate estimate for two or more months of each year and the use of the difference between the prices forecast for each of these months to indicate the probable trend of prices. The other involves the forecasting of the change in price from period to period—say from September to May or from one quarter to another. The best procedure, of

course, is to use all available methods in order to have their results to check up, one with another.

In making a plea for the distinct recognition and treatment of the problem of inference in our methods of price forecasting, I have perhaps given the impression that those who have used correlation methods of analysis have made no attempt to deal with that problem. As a matter of fact a great deal of attention has been given to it. Indeed the problem of inference has bulked much larger in the actual work of forecasting than it has in the published results of studies of "factors affecting prices." Nevertheless, I believe that much more can be done if it is generally recognized that our methods of price forecasting should include two processes: first, the statistical analysis—that is quantitative measurement of the relationships of co-variation of the past; and, second, an analysis of whether these particular relationships may be expected to obtain in the future. These two processes, however, should not be separate in the sense that one should be completed before the other is begun. Each should be part and parcel of a unified process of reasoning.

DISCUSSION BY ELIZABETH WATERMAN

HARVARD COMMITTEE ON ECONOMIC RESEARCH

Mr. Working has emphasized the dangers of relying upon statistical analysis alone in forecasting commodity prices. He has stressed the need for a priori analysis, the use of other than quantitative evidence along with the statistical data. I think he is right in calling attention to the dangers of too great a reliance upon statistical technique. We are all prone to believe that our results must mean something, after we have struggled with recalcitrant data, although we are frequently uncertain as to what that meaning is.

I shall examine further and from a different angle this question of the interpretation of the statistical methods used in commodity price forecasting, more specifically from the point of view of orthodox theory. Mr. Working has said that "in order to forecast the future of commodity prices, then, we must establish relationships of cause and effect between prices and causally important factors which antedate them." He refers to the method of multiple correlation which has been so frequently used in the forecasting of agricultural prices. The (supposedly) independent variables which are thus correlated with price are really forces affecting the simple and fundamental relationship between quantity and price, and may thus be looked on from the point of view of demand and supply. In other words, the producer is interested in the relation between the price and the quantity of goods he can produce and sell at that price. All the factors affecting the price of a commodity—the

quantity of it to be produced, the prices of related goods, the prices of raw materials, changes in production technique—(factors which would be considered as the independent variables in multiple correlation)—are merely the changes in the demand and supply of that commodity over time. It is, therefore possible to approach the whole problem of price forecasting from the simpler and broader aspect of the relation between the quantity and price of a commodity over time, or the changes in its demand and supply.

As a matter of fact, statisticians have approached price forecasting from the point of view of demand and supply. Statistical demand curves, especially, have been derived in great number. I am not going to analyse the statistical method of deriving such curves. Suffice it to say that they are lines fitted to the price-quantity distribution according to certain mathematical criteria, and that their equations express a functional relationship between quantity and price in which price is usually the dependent variable. They are for the most part the regression equations which Working criticizes from a rather different angle.

The question of the interpretation of these curves is perplexing, especially the question of their relationship to the demand (or supply) curves of orthodox theory. Almost anyone can derive a statistical demand curve. But is it a demand curve in any sense similar to that of the economic theorists? The question is one of some importance, because of the possibility of using certain theoretical concepts, such as elasticity and shifting of schedules, in a practical way, should the statistical curves approximate those of theory. Various aspects of this subject have been dealt with by Dr. E. J. Working, Dr. Holbrook Working, Professor Moore, Professor Schultz, Dr. Ezekiel, Dr. Staehle, and most recently by Dr. Leontief in the July number of *Weltwirtschaftliches Archiv*. They have all thrown light upon the problem but they have by no means solved it. They have all, without exception, attempted to relate the statistically derived curves to the curves of classical theory, in other words to the equilibrium analysis of Marshall or of the mathematical economists.

The fundamental difficulty involved in relating the theoretical and statistical curves is, of course, the question of time. The statistical curves include this time element; the theoretical curves do not. Seasonal and secular variation can be eliminated; possibly the cyclical element may sometime be removed, as Dr. Staehle advocates, but random time variation will remain. A statistical demand or supply curve, then, must necessarily represent a dynamic situation, whereas the theoretical curve represents a static, instantaneous situation.

This has all been said before many times (I have no illusions that I am saying anything new), but the logical implications of this difference have not been followed through. In attempting to clarify my own thoughts on this far from simple subject, however, the following ideas have occurred to me, which may possibly be of some use to others. I shall state them briefly and categorically.

1. From the point of view of price forecasting the dynamic element is important. The producer is not interested in forecasting price, if he could, from a demand or supply curve applying to a static situation. He is interested in the changes of price and quantity over time, and particularly their

rates of change. He regards the price-quantity relationships as a developing process, not as a set state of affairs, in which the quantity is already produced, a fixed stock on the market, and the prices merely the hypothetical variations in the minds of buyers and sellers. The elimination of time, then, is a questionable procedure, as far as deriving an equation for the purpose of price forecasting is concerned.

2. The fact remains that statistical curves do include time elements. Theoretically they may be interpreted with this time element included, both from the point of view of (a) the equilibrium analysis, and (b) from an entirely different point of view. In the first case, the curve indicates a path of equilibrium, and not a demand or supply curve; in the second, it is a moving curve, in which both price and quantity are variable over time. The germ of both points of view, the static and dynamic, are in Marshall, I think, but he did not clearly differentiate between the two.

(a) The price and quantity data from which curves of relationship are to be derived are usually plotted on a scatter diagram as a preliminary step. If one regards each price-quantity point on the scatter diagram as the intersection of two unknown supply and demand curves, at particular instants of time (this assumption has been made by both Leontief and E. J. Working) then the curve fitted to these price-quantity points is neither a demand or a supply curve, but a path of equilibrium. It seems to me perfectly consistent with the Marshallian analysis to assume that the statistical price-quantity data—representing the actual price at which a known quantity of a commodity was sold, or produced in a year, a month, or at any instant of time—are intersections of a series of static demand and supply curves, that is, points of equilibrium, rather than points on moving curves. This suggestion that the curve fitted to price-quantity data is a path of equilibrium, and not a demand curve (or a supply curve either, for that matter), seems to resolve the logical difficulties in which E. J. Working found himself when he indicated that the statistical curve would approximate a demand curve, if the changes had been largely on the *supply* side. Naturally it was somewhat difficult to decide which to call the derived curve. If one accepts the previous analysis, however there is no such difficulty. The statistical curve becomes a curve indicating the various changes in equilibria which have occurred over time.

(b) Demand and supply curves over time, however, may be approached in an entirely different fashion. They may be considered as moving curves, based on quite different assumptions. Both quantity and price would here be considered as variable over time; that is, the supply curve represents the physical cost of producing changing amounts of a commodity at various points in time, under varying productive conditions, and the demand curve expresses the changing evaluation, in terms of price, of this variable stock. Under the static assumptions, the supply curve represents the psychological cost of relinquishing parts of a stock already in existence, and the demand curve, the evaluation, in price terms, of different amounts of this constant stock.

3. In either of the above cases the curve which is derived, as expressing the relation between quantity and price over time is not a demand or supply curve in the sense in which the terms are used in the static equilibrium analysis, and

most important of all, the concept of elasticity does not apply. That concept, as it is set forth both by Cournot and Marshall and by their followers, seems to me to be inextricably tied to the assumptions made in the static equilibrium. The elasticity of demand or supply is defined as the variation in the amount of a commodity which *would* be bought or sold, with given changes in price, when the changes are very small. As I have said before, the quantity of the good is fixed, in that it is already produced; the demand and supply curves are instantaneous. Elasticity is a hypothetical concept applying to a moment of time. It certainly cannot be applied to the curve indicating the path of equilibrium. Neither can it be applied to curves which include the time element, which express the varying amounts which have actually been sold at different prices and under different productive conditions. Besides these considerations, elasticity is derived, theoretically, from an equation in which price is the independent variable. Statistical curves, especially those used for forecasting, are derived from an equation in which price is the *dependent* variable. I can see no way in which the concept of elasticity can be applied to statistical price-quantity curves. One can go through the mathematical motions of deriving the elasticity coefficient from statistical curves, but the result does not express what Cournot or Marshall meant by elasticity. It may express something even more important. That is not my point. I am saying only that it is misleading to use this result as a coefficient of elasticity in the theoretical sense and with the theoretical implications of the orthodox analysis. It is a question of definition of terms, and if elasticity is to be applied to statistical curves it must be redefined, and not in terms of static theory.

Enough has been said to indicate the difficulties involved in the interpretation of statistical price-quantity curves over time, or dynamic price-quantity curves. As far as the relation between the available data and orthodox theory are concerned, I think that one has to accept the above assumption that we are dealing with points of equilibrium, unless the equilibrium analysis is discarded altogether. One does disregard it, I think, in the type of reasoning suggested above in connection with the analysis of moving curves. And if to discard it is to facilitate economic analysis I see no reason why it should not be discarded. Suffice it to say that if the actual curve which is statistically derived from economic data is looked upon either as a path of equilibrium, or as a moving dynamic curve, one cannot use the concept of elasticity.

DISCUSSION BY ARTHUR W. MARGET

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My one objection to Dr. Working's excellent paper is that, even in the form in which I first read it, I found it difficult to discover anything with which I could quarrel; and I grieve to say that, in the revised form in which he has just presented it, he has omitted precisely the few incidental propositions with which I should have liked to take issue. Under the circumstances, there is little for me to do beyond moving a vote of thanks to him on two counts: first, for his remarks upon the use of refined statistical methods in price-analysis; and, second, for his wholesome utterances concerning the desira-

bility of attempting to "explain" movements in recorded statistical data upon the basis of some hypothesis which, for practical purposes, can be stated in terms of "cause" and "effect."

I shall not pause on the first point. I do wish, however, to say something with respect to the second. It seems to me something of a scandal that it should have been necessary for Dr. Working to utter, and for me or anyone else to second, a statement in unwavering support of the proposition that our fundamental task, in price-analysis, is to *explain*, and not merely to *describe*, and that we ought not be afraid to talk in terms of "cause" and "effect." I should not be so much disturbed if this statement had to be directed merely against the deluded optimists who really think it is easier, in the long run, to base a system of forecasting on empirical and insufficiently explained consistencies in the sequence of statistical series, or against the harried "practical" forecasters who must make some forecast, and cannot wait for the development of a satisfactory analytical technique. It does seem to me a veritable scandal, however, that such a statement should have to be directed also against workers of considerable scientific standing. These, of course, are the sophisticates who continue to advance slogans such as those to the effect that "the concept of causation is a mental construct, not inherent in the data," and "all laws are at bottom statistical laws," or who refer learnedly to the findings of the newer physics with respect to the behavior of microscopic phenomena, which are supposed to be not amenable to any treatment which runs in terms of causation. Of course these propositions are true, in a sense carefully limited and defined; but if workers in physics or any of the other natural sciences had used them in the way in which certain workers in the field of economic statistics have used them in recent years, the natural sciences would not be a hundredth part of the way along the road they have traversed in the last century; and we ought to be grateful to Dr. Working for having retained some kind of sense of proportion with respect to the epistemological considerations that have led so many others astray.

With respect to Dr. Stine's paper, I have only one comment to make. The very fact that we are prepared to draw up lists of "Data Needed" for further progress in price-analysis in itself represents an advance over the crude allegiance to strict Baconian methods in scientific procedure which is still found in certain statistical quarters,—an allegiance which, as one English lecturer at an American university declared, in discussing certain American students with whom he had come in contact, has on occasion taken the form of a belief in the proposition that "all facts are created free and equal." We want, not all data, but certain selected data. Selected on what basis? Selected, obviously, in accordance, with hypotheses which, if true, would explain the movements in recorded price-data.

Where shall we get these hypotheses? One would have thought that we ought to have gone to that body of analysis which is supposed to have been devised to explain just such phenomena, viz, the pricing theory taught in our text-books. Now, the fact of the matter is that that theory has been used already,—though, it is true, to only a very small extent,—by price-analysts and price-forecasters. Consider even the paper by Dr. Stine. As one who has had

sad experience of the scantiness in statistical form of even those data which it is our task to explain,—that is to say, price-data,—Dr. Stine is extremely modest in his requests for “data needed,” confining himself for the most part to a request for more and better price-data, or—again as might be expected from one experienced mostly with agricultural products, with respect to which the aleatory element plays such an important part in determining the amount of the “supply,”—for data recording the bare facts with respect to the amount of production of the particular commodities being analyzed. Yet even he, it will be noted, uses certain very simple concepts, such as, for example, composite supply,—if we can extend the notion to represent a subdivision of supply according to geographical origin as well as variety in quality,—and composite demand, if we may extend the latter notion also to that of a demand subdivided according to geographical areas as well as according to income-groups. The trouble with such use of theory as we have had up to date is, however, that, with very few exceptions, it has not been *articulate*. I waive the question whether a theory becomes a “theory” before it becomes articulate. I am convinced of one thing, and that is this: that we shall never know how much there is in the body of our pricing theory which is of practical use in price analysis until, with the utmost clarity, and with a fully self-conscious use of technical terms, we articulate carefully the particular theory we are using to explain price-fluctuations in the concrete case. I am convinced, also, that the chief reason why, up to the present, we have tested the utility of only the most primitive weapons in our present theoretical arsenal, has been the absence of such articulation. I am one of those who believe that the uselessness of our present theoretic equipment for the special purpose of actual price-analysis has been exaggerated, or at any rate that certain *a priori* deductions, as well as certain crudities and lack of imaginativeness in the application of some of the received theoretical devices, have prevented most of them from being given a fair test. One thing, at any rate, is certain. If we are ever to build a new pricing theory to take the place of the old,—a pricing theory which shall grow up as the result of actual attempts at analysis of the forces determining specific prices,—it will come, not from blind and clumsy tinkering with the statistics, but from a self-conscious determination to state in advance, with all the rigid precision we expect of the trained theorist, the particular hypothesis which underlies the whole of the analysis.

THE COMMERCIAL APPLICATION OF FORECASTING METHODS

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Two business executives, the manager and the assistant manager of an important department in a nation-wide business, had made elaborate plans for expansion during the coming year. Their plans included greater purchases of raw materials, expanded plant operations, and increased sales personnel and advertising. On being asked how they arrived at the estimates of probable volume and profits upon which to base their plans, they replied rather proudly that each bet the other five dollars that when results for the coming year were known his estimates would be the most accurate. With this incentive to accuracy, each proceeded, independently, to write down on a slip of paper the figures dictated by his best judgment. The two sets of estimates were recorded for future reference in settling the bet and then the final estimate for use in planning was obtained by taking the average of the two preliminary estimates. This illustration is not typical of the practices of the General Motors Corporation, the Eastman Kodak Company, the American Telegraph and Telephone Company, Swift and Company and other progressive business concerns, but it is safe to say that companies similar to those mentioned constitute only an important minority in the business world. The great majority of business concerns are comparatively small and are operated without plans on a basis of betting against the future.

The application of statistical methods in solving business problems is necessarily a slow process, but we are learning more and more about it as the years go by. Generally speaking, the men who have developed the technique have been

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in academic work or in kindred pursuits. Some of them have been interested in it for the sake of improving the quality of research or of obtaining reliable solutions of problems of an academic nature in which they are interested. The contributions which they have made to method, and to our knowledge of economic activity, have been many and great. Unfortunately, these contributions have not yet had the widespread influence upon business management that they deserve. The attitude of the academician and the business man towards each other has been an underlying difficulty. Through lack of experience and contact with business, the former frequently harbors a disinclination to see and understand the very practical and yet very interesting problems which, day by day, have to be faced by business executives. In turn, the self reliance and independence of the latter, gained in the daily process of making decisions and directing operations has made it difficult for him to learn new methods except through his own or other executive's experiences. For theoretical studies and proposals there could only be impatience.

Fortunately, there have been influences at work to reconcile these attitudes. The abstract deductive methods of the economists have become leavened by observation of the work-a-day world. Schools of business have found it necessary to know something about business problems and practices in order to teach the subjects, attract students, and gain the interest and support of business men. The attitude of business is gradually being changed by the infiltration of college-trained men and by the more potent force of business evolution. It is worthwhile to consider, for a moment, the influence of business evolution upon the need for statistics in business management.

When our population and markets were expanding rapidly, the main characteristic of good management was considered to be sound and shrewd judgment. Ability to make quick decisions ranked high. Statistical and other records of past accomplishments and failures were not kept because they were not regarded as essential. Even today, especially among older executives, it is not uncommon to find an expression of the opinion that too many records confuse the mind and make decisions difficult to reach.

This view has changed because the increased size of business units and the severity of competition have made the less precise methods of operating plants and of buying and selling unsatisfactory. There is said to be an excess of plant capacity in many industries. In most instances, expanding sales and diminishing unit costs are no longer great enough to offset the evil effects of unsound judgment. Quick decisions are too risky. Captains of industry take time to marshall the facts and to analyze and consider carefully all sides of a question. Whatever be the points of debate among economic theorists about the origin of profits, certain it is that, for individual enterprise, the maintenance of net earnings depends at least partly upon the ability of the management to displace the element of pure chance in every phase of the business. Just as the antidote for uncertainty is exact advance knowledge, so the substitute for haphazard business operations is planned buying and selling.

The movement towards a greater amount of business planning has been facilitated by the growth of large scale enterprise. The fundamental reason for the success of planning in large enterprises lies deeper than the mere fact that the cost is almost infinitesimal per dollar of sales. The older executive's view, mentioned above, was and still is the characteristic viewpoint of small concerns, and, for them, can be justified to some extent. Small business organizations move along from day to day and from month to month on a basis of pure opportunism. Their interest is in the particular orders, quite unconscious of the fact that in some periods of the year the orders are larger and more numerous than at other periods. Their salesmen are to be found making just as many daily or weekly calls on people who, on account of the size and character of their business, have little use for the product in comparison with steady users. Like the farmer's hog breeding operations, the purchases of raw materials and the manufacturing operations of many small concerns are based on previous experiences rather than upon probable future developments, in which, of course, current activities inside and outside the particular industry have an influence. Opportunism is to be expected wherever the volume of business, the population, or the area covered is not large, because small numbers are likely to give rise to instability or

uncertainty. In any sampling process, relatively large numbers are necessary in order to facilitate mental and statistical generalization. Large scale production and marketing has the advantage in this respect, as well as in being able to carry on statistical research economically.

Single events or observations, especially those of an exceptional nature, frequently play too important a part in moulding business policies. Unfortunately, the business executive little realizes that the single event is but one of a group of similar events and differs only in degree from many others of its kind. The likelihood of its recurrence or of a similar circumstance being in existence at present depends on the normality of the event. The more abnormal it is, the lower the probability of its recurrence and hence the greater the risk involved in basing business decisions upon it. Conversely, the more normal it is, the more frequent its recurrence and the more secure the business plans adjusted to it. Helping to discover the normal situation, the normal tendency and the reasons for variation from normal, is the function performed by statistical methods in the planning of business operations.

Plans or budgets are useful in efficient management. To be successful every company should study what it has done and what others are doing; it must think carefully through what it is going to do; it must outline a program of action; and then it must provide the organization and funds by which to put its program into practical operation. A number of companies follow this procedure in either a formal or an informal manner. A formal budget is preferable to an informal one because it enables all parts of an organization to work together cooperatively in studying past results, in arriving at the proper plans for the future and in putting them into operation.²

Budgeting, however, is not to be construed as a set of rules or forms. The methods of budgeting must be adapted to the needs of the individual concern, and the budget itself must take into account the particular factors affecting it. Obviously the budget's scope is very wide. It applies to

² See "Budgeting Technique" by J. O. McKinsey and a Committee, American Management Association, Annual Convention Series No. 51.

capital expenditures; it applies to sales; it is a necessary element of any sort of intelligent purchasing, though unfortunately it is often disregarded in buying materials and supplies. The budget is involved in every manufacturing program. It is expedient to budget personnel and labor requirements. It is the means of judicious financial administration. It omits only the year's supply of ideas—an immeasurable quantity. Since the central idea of the budget is to direct and control through understanding, plans or budgets are nothing more than applied predictions. It is possible, therefore, to visualize the tremendous scope of statistical forecasting as an aid to business management and to write a volume dealing with the various topics. Let us limit the discussion to the divisions and types of prediction that may be of help to the business man.

Long-time forecasts are of greater value than may be supposed. An instance of long distance forecasting is found in the American Telephone and Telegraph Company which forecasts revenue and expenditure items for a period of years. Its forecasts are adjusted annually and its activities budgeted accordingly. Because their capital is largely invested in plants and other property which is slow to wear out and because their services and revenue are proportional to the main currents of business growth and increase in wealth and population, public utilities have an unusual opportunity to use long-time forecasts. The railways are in the same position, and in some instances, such as the Canadian National Railways and the Illinois Central, it is done extensively. In the packing business where plants are built or purchased, the probable changes in the local supply of labor, the trend of livestock production, and numerous other factors have to be studied. In fact, forecasts of the shifts in agricultural production are of great importance in such a problem. Likewise when the establishment of a branch selling house at a particular place is contemplated, the growth of population, industry, wealth, competition and the like, deserve the most careful statistical analysis.

A group of concerns find their business very dependent upon the business cycle and prediction for them is mainly a question of finding a business indicator, the ups and downs

of which their own business will follow with a lag. An interesting example is the American Radiator Company. Building contracts, building permits, or one of the other statistical series representing building activity provides this company with a pretty good measure of its own potential activity and moves sufficiently ahead to enable the management to guide their business almost perfectly. The immediate benefit is in control of volume and distribution of inventory. The forecasts are seldom further from the facts than about ten per cent over a period of six months to a year.³

In the case of concerns whose business is affected concurrently by the business cycle, the problem of forecasting is not as easy. For example, a concern engaged in building or in underwriting construction projects does not experience a "lag" between changes in the curve of building activity and changes in its own volume of business. Its tie up with the building industry comes usually with its commitments following the award of the contract. Its forecasting problem requires careful study of the general building situation and the factors responsible for changing trends in aggregate national building activity including such factors as growth of population, rising standards of living, obsolescence of old structures, changing levels of building costs, interest rates and general business conditions.⁴

We come to a third class of forecasts—those which have to do with the supplies and prices of raw materials, not as yet capable of much control but available in widely varying amounts from time to time. Farm products are the best examples, and from the standpoint of the commercial concern, the forecasting of the prices and amounts to be marketed is of benefit in storage control and in budgeting plant operations, labor, the borrowing of funds, etc. For example, the dressed weight of hogs slaughtered was 8,181,000,000 pounds in 1926 and 9,387,000,000 pounds in 1928. Obviously with a change of over one billion pounds in two years, with similar changes in pork supply in past years, and with wide variations in the supplies of other

³ See "The Organization of the Control of Production and Distribution Based Upon Forecasts of External Conditions," by R. B. Flershem, *American Management Series No. 59*.

⁴ See Comments by W. C. Clark, S. W. Straus & Company, *American Management Association, Annual Convention Series No. 59*.

products such as beef, veal, lamb, poultry, eggs, and butter, a plant-operating and warehousing program cannot be planned intelligently without knowing approximately what the supplies will be, and approximately when they will come to market. Ability to make these forecasts presupposes a knowledge of the factors that influence the farmer's production. These factors include the long time shifts in agricultural production and farm practices which, along with demand factors, influence the purchasing power and relative profitableness of producing given quantities of each product; the changes in profitableness over the shorter period of a few years which are manifested in the cycle phenomena of hogs, poultry, eggs, sheep, and cattle, and influenced to a slight extent by the business cycle, the year to year influences of the supply and price of feed at the farm; the seasonal swings which vary from year to year with the longer time influences mentioned above and which may be radically changed by changes in farm practices; and the week to week variations in actual market receipts from those estimated on a longer period basis on account of the weather, farm operations, etc. All of them are capable of some degree of prediction if measures of the underlying causes are available. Detailed description, however, is unnecessary since many interesting studies of these problems have been published. With their aid and that of the Government surveys and reports, forecasts of these supplies are steadily becoming of greater practical value in business management. By means of various barometers, Swift and Company, for example, has been able to forecast annual supplies of pork for the past five years with an average error of about five per cent. To the extent that these forecasts are successful, they aid in reducing risks and providing better control of operations in the individual concern. Under ordinary competitive conditions, the resulting reduction in business cost will, in time, be passed on to the consumer in lower prices and better service.

The above discussion necessarily implies a lapse of time. Because of the risk involved in fluctuating supplies and prices, the passage of time is of great importance to all business concerns which do not act as agents and which

buy at one time and sell later. In these speculative operations, the benefit to be derived from forecasting depends mainly upon the length of time involved in handling or storing the product. From this angle two groups of products are distinguishable, even though no dividing line exists between them.

- a. Products which are sold promptly on being received from the farm on account of perishability, e.g., fresh fruits and vegetables.
- b. Products which are processed and stored, e.g., canned fruits and vegetables, hams, cotton, tobacco, etc.

For the commercial concern engaged in buying and selling products in the first group, price forecasting is not very important. The main problem is to move the commodities quickly. Short-time forecasting of receipts and prices may be of some benefit in protecting margins from day to day, as in the case of mellons, peaches or strawberries at the New York market. Up to the present beef has been in the same class. Since it is necessary to maintain established connections with retailers of beef, the merchandising of the product on a declining market cannot be discontinued. Under such circumstances, speedy handling is of prime importance in protecting margins, and forecasts are not nearly so helpful. Consequently, there has not been the same urge to make careful forecasts, as has existed in the case of a stored product such as pork. Nevertheless forecasts are helpful in planning the selling of products in this class, even when a high degree of accuracy has not been attained. It is interesting to note that by short time predictions of the marketings of Georgia peaches, the Atlantic Commission Company has enabled that large chain store organization, the Great Atlantic and Pacific Tea Company to plan its advertising of peaches, and thereby to promote consumption in its many store areas at the time when supplies of this perishable product are heaviest. The effect of this coordination of effort upon sales volume, rate of stock-turn, selling expense, prices, and the quality of the product reaching the consumer's table is said to be very beneficial.⁵

⁵ "Chain Store Methods of Buying Agricultural Products" an address given by H. A. Baum, Atlantic Commission Co. at the annual meeting of the American Economic Association, December 27, 1929.

Through the development of methods of preservation, more and more of the products in the first group are also to be found in the second group. The low-temperature freezing of fruits, fish, beef, and other meats is an indication of the tendency. When added to the variability of production, storage creates a difficult problem in business planning. It is faced in such industries as leather, sugar, cotton and tobacco. For these cases, not only the importance but also the difficulty of forecasting may be illustrated from the packing industry.

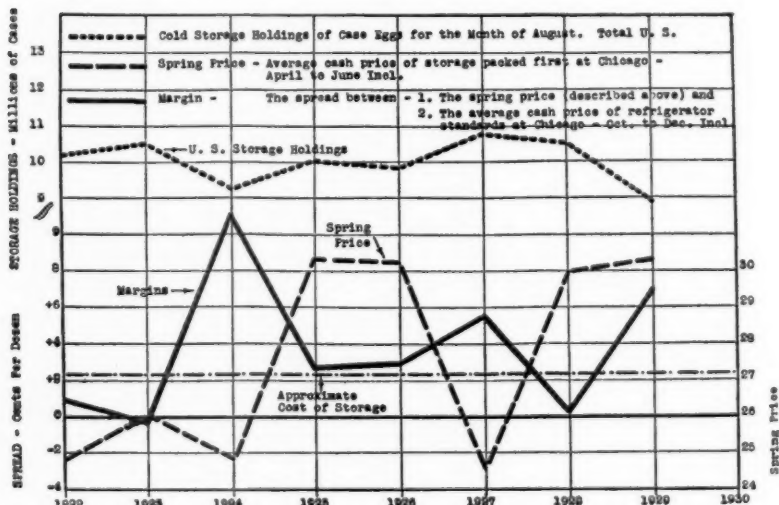
Before the inception of cold storage, the wide variation in market receipts resulted in successive periods of glut and famine. Poultry raisers, for example, suffered from the extremely low prices necessary in moving into consumption their poultry output in a short period of time, and while consumers benefited at that time, only the well-to-do could buy poultry products during the remainder of the year. Cold storage solved this problem. Companies and individuals dealing in storage eggs and poultry bid against each other in buying up the surplus output and thereby maintain relatively high prices for the farmer in the season of heavy market receipts. On the other hand, the consumer is able to buy good storage poultry and eggs when farm marketings are meager and at prices which are relatively much lower than before cold storage was introduced. It is not difficult to see how the consumer might be benefited, in these operations, by good commercial forecasting. If a concern or individual speculator determines that the price spread between the season of storage accumulation and the season of consumption will exceed all the costs of the storage service, it will be profitable to place more in storage. In so doing, the price paid to the farmer will be bid up and the price paid later by the consumer will tend to be lower on account of the increased available supply. A forecast that the spread will not be sufficient to cover storage costs tends to reduce prices at the time of farm marketing and not only causes more to pass into current consumption but brings about a price spread sufficient to cover storage expenses, thereby assuring a future supply. Correct forecasts are beneficial to the farmer and consumer as well as to the business con-

cern making them for the sake of profit. On the other hand, forecasts which are not in accord with the facts are liable to be very disastrous to the commercial forecaster. Let us look into this aspect a little more thoroughly.

It is a fact that the service of distributing the product to the consumer over a period of time has frequently been rendered at a loss. One reason is that it has been a habit for the concerns engaged in the business to become too optimistic about the prices to be obtained for their storage stocks and by competition for the supply to bid up the purchase prices paid to the farmer, and later also benefit the consumer by sacrifice prices. Evidently there are more bulls than bears in this business as well as in the stock market. The annual fluctuations in spring egg prices, storage egg stocks, and the spread between the price during the spring accumulation period and the out-of-storage price during the following autumn are illustrated in Chart I. A second reason is that the problem of storing a product profitably is not a simple matter when all the factors affecting the situation are viewed calmly. For example in storing eggs,

CHART I

PRICE OF EGGS IN THE SPRING AND STORAGE HOLDINGS IN THE FALL COMPARED WITH THE MARGIN BETWEEN SPRING AND WINTER EGG PRICES



the storage season has steadily become shorter with fresh eggs tending to appear on the market in annually increasing amounts before storage stocks are sold. The storing period for pork may be shortened in similar fashion if farm practices can be sufficiently changed.

Even under present circumstances the storing of pork profitably is a complicated task for the large packer. Ordinarily something like 55 per cent of the hogs produced in this country are marketed in the four winter months, November to March. The sales of cured pork products, on the contrary, are sometimes heaviest when marketings of hogs are lightest. For example, the sale of hams in July is usually about 50 per cent greater than in January, whereas the marketing of hogs in January is about 50 per cent larger than in July. This makes it necessary for the packing industry to carry over the excess supply from the winter for consumption during the following summer. It is very desirable to know during the storing season in the winter whether the shortage in the summer will be a large or a small one. Failure to store the proper amount frequently causes serious losses. Hence it is necessary to forecast not only the probable supply for the year but also the way in which it is going to be distributed between winter and summer. Many factors affect the time of marketing hogs, such as corn and hog prices, and the corn supply both during and previous to the period of marketing. Through the use of these and other factors, our forecasting division has been of considerable help in the planning and control of our storage stocks of provisions, poultry and eggs.⁶

A fifth class of forecasts relate to consumption and sales. From what has been said about the storing of pork, it is clear that the seasonal variation in its consumption does not coincide with its production. With the exception of the perishable products that pass promptly and in their entirety into consumption, the forecasting of production and of consumption are two different problems. There are rival uses for particular products and each rival demand is a fore-

⁶ See "Methods of Forecasting Hog Production and Marketing," by S. W. Russell, Swift & Company, *Journal of the American Statistical Association*, March 1929 Supplement New Series No. 165A, also Discussion by A. T. Kearney, *American Management Association Convention*, Series No. 59.

casting problem in itself. While it is important for the individual business to study the general tendencies in the consumption of the products in which it is interested, it is especially important for it to study the trends and variations in its own sales as compared with total consumption. Differences between general consumption and particular sales curves are to be found when the quality of the particular company's product deviates from the average quality passing into consumption, when the individual concern is comparatively aggressive or laggard and when the character of the individual business affects it. In the last instance Swift and Company's sales of butter provide an interesting example because, when the price is highest in the winter months, the sales volume is greater on account of the company's heavy out-of-storage sales during that period. Consequently in budgeting the company's monthly sales to be expected at different prices, it is impractical to make estimates based on the usual curve of relationship between monthly prices and total consumption. Along with other factors, however, this relationship holds between yearly prices and the separate annual sales of fresh and storage butter.

An interesting example of sales control and stabilization arising out of the commercial application of forecasting methods has been described by R. B. Flershem, Sales Vice-President of the American Radiator Company as follows:⁷

"Because Moving Day is on May first, more buildings are completed in the spring of the year than at any other time and, therefore, more radiators are ordered in the spring for future delivery in the fall than at any other time, and most of them are needed four to six months after the order is placed. That makes a seasonal issue of it.

"We had not thought a great deal on this subject as related to selling method until a very exceptional order for a large group of buildings was placed with our company early in 1922 for delivery in the fall. Deliveries were strung along half a dozen carloads at a time, at intervals covering an entire year. Much of the order was delivered at a loss due to costs being higher in the fall than in the spring.

"This led to a statistical study which revealed the precise seasonal variations occurring in demand, costs and prices over a period of sixteen years. . . .

"In the first period—February, March and April—(it will be observed that), volume of production is more than double volume of sales.

⁷ See American Management Association—Sales Executive Series No. 26.

"In the next period—May, June and July—production is about 15 per cent greater than sales.

"In the third period—August, September, and October—sales are approximately 50 per cent greater than production, and

"In the fourth period—November, December and January—sales are slightly more than production.

"A decided and distinct difference in manufacturing costs as between March and October, was discovered—imposed by night work, extra pay, green help, and all the necessary expense factors involved in obtaining a rapid and large increase in production to meet the increased seasonal demand current in the fall of the year—the piling and storing of huge quantities of radiators during the spring and summer to meet the fall demand, and the fall night shifts in the factories and warehouses, the delays in deliveries and ensuing loss of time—all these factors combined imposed a great waste and burden on the industry.

"We felt there might be some remedy which might be of benefit to all—the public, our customers and ourselves. The remedy we adopted . . . has become known as the 'Period Price Policy.'

"In the First Period when the seasonal supply is greatly in excess of seasonal demand, the lowest level of price during the entire year is in effect.

"In the Second Period as the demand increases, the price is automatically advanced $2\frac{1}{2}$ per cent.

"In the Third Period when demand is considerably more than supply, the price is advanced another $2\frac{1}{2}$ per cent.

"In the Fourth Period when the demand is slightly more than supply, the price is reduced $2\frac{1}{2}$ per cent, and finally when the First Period is reached again, and supply is far more than demand, the price is reduced another $2\frac{1}{2}$ per cent to the starting point, thus completing the cycle.

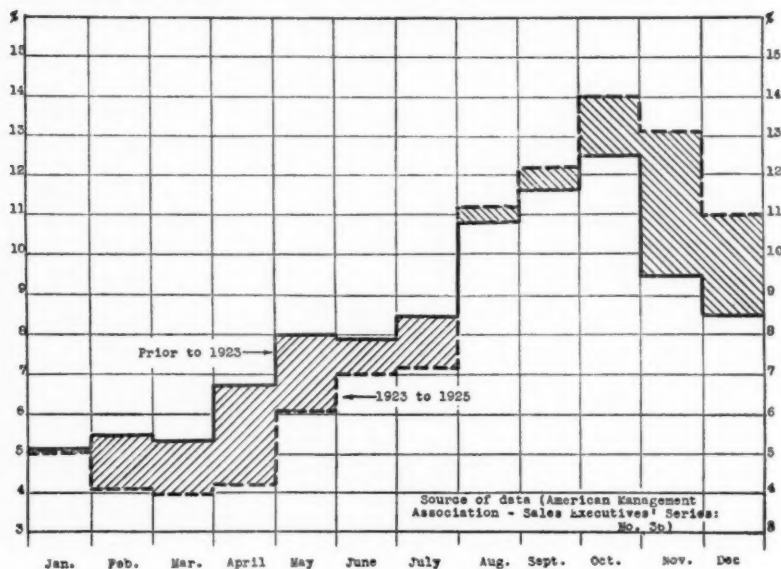
"This method of selling simply established a spot price for radiators and a price for future delivery. It follows the economic law of quoting a price consistent with the cost at the time of delivery instead of at the time of placing the order. It harmonizes the effect of time on the price structure.

"The effect produced on the seasonal demand for our products by the adoption of this selling method by our company is indicated in Chart II. The dotted line represents the volume of our business charted in the same manner in the years following the adoption of the plan.

"The curve of seasonal demand, as indicated, was leveled to a very considerable extent by the adoption of this selling method, and whereas it has been severely attacked by competitors who have either rejected it, or have used it only intermittently, it has been possible to maintain its use in our company for the past three years, and has resulted in the elimination of great waste, and of real benefit and better service to the trade and the public."

Up to the present the discussion has turned on the problems of analyzing and forecasting changes in time as a basis for better business management. From the marketing standpoint, time distribution involves all the problems of efficient distribution of the particular product or service over periods

CHART II
AMERICAN RADIATOR COMPANY'S SEASONAL SALES VARIATIONS



of time in order that the consumer may always have an available supply. Another category of business management problems can be distinguished under the title of place distribution. Place distribution includes the proper geographic distribution of the particular supply at any given time. For the business manager the question is "Where may our selling efforts be placed most effectively?" Statistical prediction can be very helpful in answering this question.

In the first place, a good forecast of the sales possibilities in a given locality can be obtained by a thorough study of the trends in population, industries, occupations, and other fundamental characteristics as they relate to the particular business. For example, before making a building loan in a given locality, S. W. Straus and Company make local rental surveys involving detailed investigations of rental conditions in specific areas, existing supply of and demand for building facilities in such districts, vacancies and rental rates and all the other factors which determine

the possibilities of a given locality and of a specific project.* Although in a different industry, Swift and Company finds similar predictions of much value in deciding the location, reconstruction, or discontinuation of branch houses and plants. For example, a decision to establish a branch house at Flint, Michigan, an automobile manufacturing center, would depend largely upon forecasts of population, industrial growth, sales of the particular automobiles made there, variability of employment, neighboring agricultural development, and competition from other packers. Such forecasts are also of help in comparing sales growth, and in solving many other local sales management problems. In reality this is nothing but time forecasting as it relates to a particular location.

In selling a given product and setting sales budgets or quotas, the sales manager of a nation-wide organization is faced with the problem of measuring the comparative merits of different areas and statistical prediction may aid him in doing so. For example, Swift and Company's main market is the United States with a population of over 117 millions. This great population is not spread uniformly over the land area and as a consequence, it is natural that Swift and Company's selling organization is larger in the areas of denser population. It may be noted that this company has over 450 branch houses and over 700 car routes. Some general areas are predominantly agricultural in character and produce a surplus of some foods. Not only has it been necessary to be well equipped to market this surplus in the deficit producing areas but also to develop a specially adapted type of selling organization, the car routes for supplying meats and produce to the towns and cities within the surplus-producing areas.

A controlling factor in the extension of many sales organizations is worthy of consideration. In the long run, a sales organization can maintain itself in any area only if it has sufficient volume. A large butter marketing organization, for example, can not afford to establish a branch selling office in a town of 5,000 or 10,000 population, because over-

* See Comments by W. C. Clark, S. W. Straus and Company American Management Association, Annual Convention Series No. 59.

head expenses would be too great. If it wishes its product to be sold in a town of that size, it must relinquish the sales control to a broker or jobber who, perhaps, may sell it under his own brand name. Swift and Company, on the other hand, sells poultry and eggs along with butter, cheese, beef, pork, and other products under its own brand names and through its own branch-houses and car routes direct to the retail trade. A wide variety of products and a large volume of sales enable these selling organizations to operate economically in relatively small centers of population and the salesmen to canvass the retail trade, everywhere. Because the strength and prevalence of specialized concerns tend to vary directly with the density of population, the per capita sales of many nation-wide organizations vary inversely with this same factor. Thus while complete sales coverage of the consuming population may sometimes be a worthy ambition, much waste effort arises from the lack of recognition of the fact that some areas provide opportunities for greater per capita sales of a particular product than other areas. In budgeting sales, therefore, the business manager will find it necessary to give this fact increasing consideration.

It is doubtful whether information about the geographical differences in total consumption of butter, eggs, or other products may be used by a distributor as measures of the potential markets for his respective products. Depending, for example, on the quality, flavor and other characteristics of his butter compared with the average of all butter, his sales will be found at variance with total consumption from area to area. Hence, the per capita consumption of an average grade of butter may be found to vary directly with per capita wealth, while a lower than average grade of butter will vary inversely with the same fundamental factor. From the standpoint of the individual distributor, therefore, it has been necessary to study the effect of varying conditions upon the sales of his product by travel and experience from area to area. This procedure, however, does not provide a definite measure of the importance of observable factors and probably does not uncover the effect of minor factors at all. Moreover, sales quotas are not likely to be accepted

wholeheartedly by the sales force unless there is definite proof that a given factor does influence the sales of a commodity and unless the weight assigned to it is determined by a definite method of measurement rather than by individual opinion and guess work. Partial and multiple correlation provide the only practical way to find out the precise relationship of each factor and of all factors combined to the sales of a given product. Not only does this method show on the average how much of the variation in per capita sales from territory to territory is due to a particular factor but when two factors partially or completely duplicate each other, over weighting of the influence common to both does not occur. If reliable data be used to measure all the fundamental factors, with the exception of sales efficiency, the resulting estimates will indicate the potential market in the various areas. The percentages by which actual sales exceed or fall short of the quota will measure the degree to which the respective salesmen are above or below the average efficiency of the company's sales force and the extent to which advantage is being taken of sales opportunities.*

This method of measuring and predicting potential sales in different areas has yielded interesting results. It has become apparent that there are at least three main groups of reasons for territorial sales variation:

- (a) Differences in consumption.
- (b) Differences in merchandising conditions.
- (c) Differences in the selling effort of salesmen and advertising.

For example, Swift and Company's per capita sales of poultry in the many branch house and car route areas are affected in a positive direction by such consumption factors as foreign born, Negro, Jewish, transient population, and income. They are affected negatively by such merchandising factors as local surplus production and by special competition varying with the density of population. They also vary on account of differences in the amount and quality

*For a more extended discussion of the defects in other methods of setting sales quotas see (1) "Some Difficulties to be Encountered in Determining Sales Quotas" by D. R. Cowan, American Management Assn. (2) "Analyzing the Market for Poultry Products" by D. R. Cowan, Proceedings of the American Institution of Cooperation, Third summer session Northwestern University 1927.

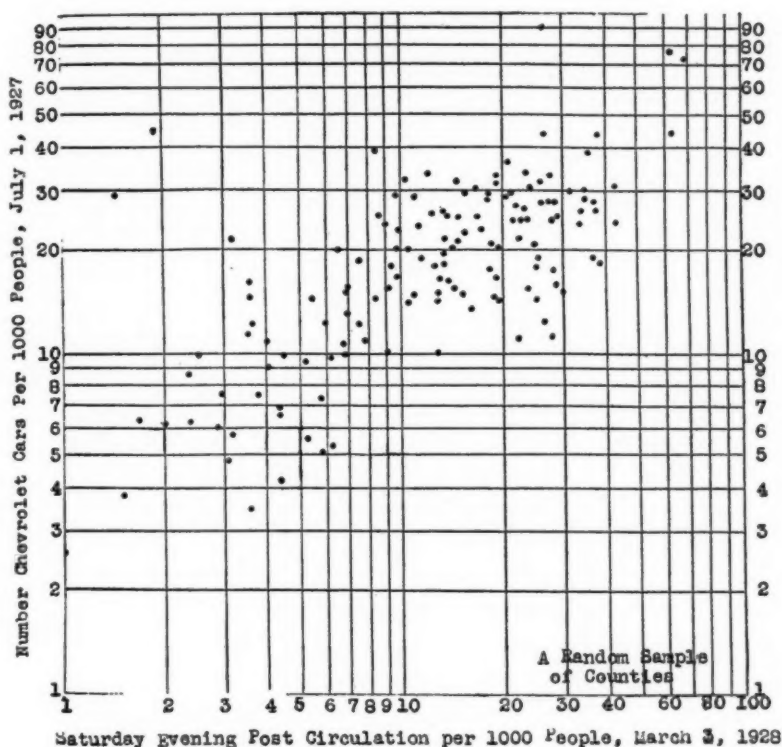
of sales effort put forth relative to the population and the retail trade to be covered. The writer has found, by numerous analyses, that the method is generally applicable to problems of this nature. For example, he has discovered that in the 48 states, 7 factors account for 90 per cent of the variation in the 1927 per capita sales of life insurance; that 8 factors account for 92 per cent of the variation in per capita circulation of the *Saturday Evening Post* and that 9 factors explain 86 per cent of the per capita variation in Chevrolet car Registrations.

The third group of reasons for differences in territorial sales variation included selling, advertising, and other expenditures of effort and suggests for brief discussion, a third opportunity for the application of statistical measurement and prediction in business. Besides the questions "When?" and "Where?" business management must answer "How?" As a basis for answering the last question with regard to sales it is necessary first to measure the effect upon sales of varying numbers of salesmen, varying amounts of different sorts of advertising, varying numbers of branch houses or car routes per million people, etc., and then to translate these physical measurements into monetary terms. After allowing for other influences, the comparison of per capita sales and salesmen per 1,000 people in a large number of areas makes it possible to establish the curve of relationship between the two and then to determine, for a given instance, the probable increase in sales to be brought about by successive additions of one salesman. Similar measurements of the effect of varying amounts of advertising upon sales can be carried out. For example, there is a striking relationship between per capita Chevrolet registration and the circulation of the *Saturday Evening Post*—one of the media by which it is extensively advertised.

"The fact that the purchasers of Chevrolet automobiles may also like to buy the *Saturday Evening Post* may give rise to some associated variations in the two series and thereby prevent the conclusion that the entire relationship is due to advertising effect. Probably this difficulty may be met by measuring the importance of the respective factors causing variation in the use of the product advertised. For this purpose, multiple correlation must be employed. Not only the per capita circulation of the magazines carrying the advertising

CHART III

GROSS RELATIONSHIP BETWEEN SATURDAY EVENING POST CIRCULATION AND
CHEVROLET REGISTRATIONS



but also the more important factors affecting in common the sales of both the product and the media should be included as influences to be measured. In applying the method to Chevrolet registrations, the combined circulation of the Curtis Publishing Company's magazines was used instead of the *Saturday Evening Post* alone because the *Ladies Home Journal* and the *Country Gentleman* also carry Chevrolet advertising. The study showed that 86 per cent of the total variation in Chevrolet registrations in the 48 states was explained by variations in 9 factors. . . . The influences credited to the two factors, total Curtis Circulation and number of Income Tax Returns per 100 people, were 56 per cent and 9 per cent respectively. Included in each of these percentages, however, was a joint or inseparable influence common to both factors amounting to 8 per cent. . . . Since variation in the application of advertising enables the measurement of the consequent variation in the purchases of the advertised product, it is correct to say that, within the limitations prescribed by the factors included in the study, the influence of this national advertising is at

least 48 per cent of the total influences bearing upon Chevrolet car registrations in 1927."¹⁰

In this and similar instances, a diminishing returns curve is established which, with a small amount of labor, enables the determination of the point beyond which an additional salesman, billboard, or service truck will not increase sales enough to cover the additional cost.¹¹ Finally, it is possible to determine many of the conditions which govern the effectiveness of a given expenditure for advertising and thereby to choose the areas in which advertising will yield the greatest return. Certain studies¹² have already demonstrated the practicability of this undertaking and pave the way for a revolutionary step in the controlling and placing of advertising effort in such manner as to maximize its effectiveness and the monetary return from it. In fact, such relationships as those existing between salaries or rental expense per foot of floor space and the size of city or between the relative volume of different products and the variation in their joint selling cost are fundamental in analyses of the conditions limiting the possibilities of sales coverage, and their discovery points the way to measurement, prediction, and control of expense and effort.

All through this paper very little mention has been made of the numerous theoretical problems in economics and statistics connected with the more or less practical application of statistical prediction in business management. In a paper dealing with the application of method, it is necessary to omit such interesting problems as the obtaining of a consumer demand curve, the possible measurement of the marginal utility of a product to a class of people by observing the changes in the slope of the geographic sales curve for that class with changes in the product's price, the question whether the regression curve of varying amounts of sales upon varying numbers of salesmen from area to area gives a true diminishing returns curve, the validity of the coefficient of partial determination as a measure of the vari-

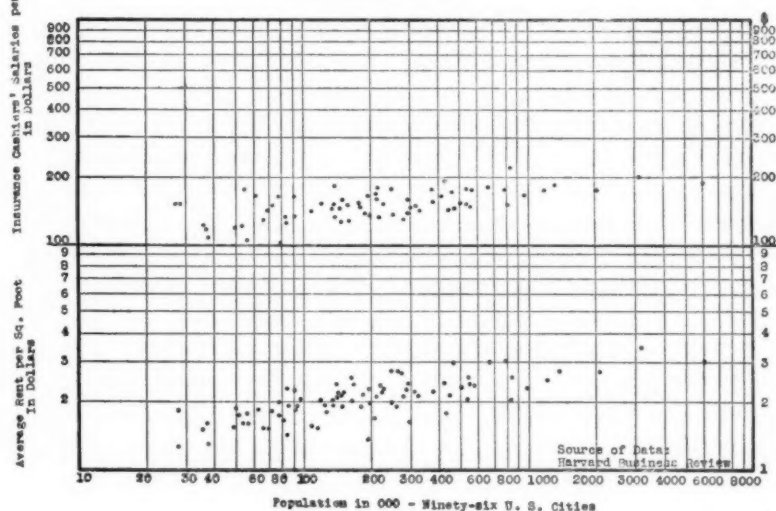
¹⁰ For a more complete description of this study and its importance, see "The Measurement of Advertising Effect," a paper read by D. R. Cowan, at the Annual Meeting of the National Association of Teachers of Marketing and Advertising December 28, 1929.

¹¹ See J. D. Black—"Production Economics," and H. Schultz—"Statistical Laws of Demand and Supply."

¹² "The Measurement of Advertising Effect" to which reference was previously made.

CHART IV

INSURANCE CASHIERS' SALARIES PER MONTH, AVERAGE RENT PER
SQUARE FOOT, AND POPULATION FOR 96 CITIES IN THE
UNITED STATES



ability attributable to a particular statistical factor, or the relative merits of the mathematical and approximation methods of multiple correlation.

The business man, as such, is motivated by profit. He is not interested in research for research's sake but in research for profit. Whether or not the attitude of the business man and the academician can be reconciled depends on whether their length of vision coincides. If the business man is willing to support research on a problem, the answer to which may take years to find, his viewpoint, while more definite, is not far from that of the academician because the latter's studies are also likely to enable some concerns to make more profit than others. Ordinarily, the business man's viewpoint is intermediate or short in length. The distant future may take care of itself. He wants the results of research to be fairly definite and fairly immediate.

This profit point of view has its influence on the application of price forecasting methods in several ways—first, the stress on the obtaining of results within a reasonable time

has emphasized the necessity of using as simple and as direct methods as possible. Even when the statistician knows them to be not quite as accurate, he tends to use the quicker methods, in preference to the mathematically correct methods. For example, a free hand trend line may often be fitted instead of one determined by least squares, or percentage deviations from a free hand trend may be used instead of link relative in cycle and seasonal analysis.

Secondly, the stress on quick methods has been emphasized by the magnitude of the projects undertaken and the necessity of restricting the expense involved within reasonable limits. When, for example, the research worker in a large corporation is confronted with the determination of 2,000 indices of seasonal variation within a limited time, the mean deviation method will be used instead of the median link-relative method because of the shorter time required. The percentage deviations can be read directly from a ratio chart, and when these percentages are arranged in columns for corresponding months, a comptometer operator can very speedily work out the arithmetic means and the succeeding steps in preparation of each index. The obtaining of link relatives and the arranging of them so as to obtain the monthly medians not only requires more time but cannot as readily be delegated to clerical help because of the element of judgment required in median determination.

Thirdly, the profit motive influences the theory underlying the analysis of time series. To illustrate, a recent book on forecasting contains no mention of the well-known statistical concepts—the frequency distribution, the averages, the measures of dispersion and probability, and the coefficients of correlation. For forecasting purposes, the original components of a series (namely cycle, seasonal, and trend) are obtained by methods unfamiliar to most statisticians and, for the current period, the relative intensities of these components are used by themselves to forecast the succeeding movements of the same series. That is to say, the series contains, as component parts of itself, the elements which, in the past, gave rise to the present state, and which at present are operating to bring about certain future conditions pertaining to it itself. This is really “action and reaction” theory

and while perhaps partially true of the phenomena underlying some time series, it is not the whole truth. Regardless of the method's merits it is not apt to appeal to the business executive when he reviews a particular study presented to him by a research worker. The reason why this is true is to be found in the fact that the business man is striving to make a profit or to avoid a loss. He is used to speculative reasoning as to the causes of phenomena relating to his business and as to the way in which conditions today will effect his business tomorrow. Often these reasonings are incorrect, are quite unsupported by facts, and merit the statement that business men are, in a sense, more theoretical than men in academic life. The fact remains, however, that the business man is rational. His experience easily leads him to agree that the variations in the price of a particular article are brought about by, and are the composite results of the variations in the conditions of demand and supply, both of this and competing articles, the general price level, business conditions, etc. He can be brought to understand that over a period of years, these factors combine in different proportions to bring about variations in the series being forecasted and that various methods have been devised for the purpose of measuring the separate and joint influences of the factors affecting a series. His confidence can gradually be established in a skilled statistician's ability to combine these measurements into forecasts which are not only numerically definite, but logical, being based on understandable cause and effect relationships.

Fourthly, the business man puts no stock in statistical formulæ. They are too mysterious to inspire him with confidence. In his view, there is no formula to solve a particular situation. He is accustomed to the taking of each case as it arises, the directing of his own analysis, and the combining of the elements for a solution of his own making. Where he has been baffled, he does not easily concede to a statistician and a comparative newcomer in the business, the credit for what seems to him a ready made solution. He does not treat the chemical research worker in the same fashion. The latter has had certain advantages in this re-

spect. The business man has not done much tinkering with chemicals and the chemist has advanced into a new field where the business man had not previously worked. Take for example, a new piece of steel, a new blend of cheese, or a new chemical fertilizer. The chemist has been able to present this new material to his business manager without describing precisely how the atoms of one element combined with those of others, without the necessity of proving that this result could always be accomplished by the formula, and with laboratory tests of its qualities in practical use. The student of prices has been unable to prove that his forecast would work out exactly because factors not included in his formula cannot be held constant in the dynamics of business, and because a successful forecast or good fit to the data of past years is not absolute proof that a minor, unmeasured, or unknown factor will not experience such an extreme deviation in itself that the new forecast will be wrong. Hence, in the early stages, at least, the business manager insists upon the precaution that he shall know how the forecast was made, and have the privilege of accepting, rejecting or improving it according to his judgment. It behooves the statistician to refrain from talking about coefficients of variation, correlation, regression, determination, and error except in the presence of other statisticians and to develop simple descriptions of the methods used and of the results obtained. Gross and net correlation charts, showing straight and curved regression lines with residuals plotted about them are particularly helpful in presenting an analysis. The changes in the estimate to be expected with corresponding variations in a factor, quantitatively measured, may conveniently be shown in table form. Percentages corresponding to the disputed coefficients of determination seem helpful in summarizing the importance of each influence. Ratio and double ratio charts are of great service when logarithmic relationships are to be portrayed. The relationship between the actual figures and the estimates may be shown by use of a table, historical graph, or correlation chart.

The necessity for simplified presentation of statistical analysis in business does not make the fundamental con-

cepts and coefficients any less useful to statisticians themselves, but it does have a very healthy influence on the profession in that the attaining of Sigma's, Beta's, Eta's, R's, and Rho's cannot be ends in themselves or cloaks for illogical or mechanical analysis. The statistician who can see his problem clearly enough to apply statistical method successfully and to present the results convincingly is indeed a master of the method, of the logic underlying the problem and of simple business English.

Fifthly, business usually requires the statistician to present a constructive program as a result of his analysis. It is not enough to analyze critically the policy of a company in buying its supplies or selling its products at a certain time, price, or place. While no action is occasionally the better plan, usually an improved plan of action must be suggested. Granted, for example, that some butter must be stored, if the present policy or plan for buying it for storage or for selling it again is not correct, how may it be improved? Sometimes, academic statisticians have been rather prone to criticize rather than to construct. The necessity of balancing negative and positive programs, is likely to have a healthy influence on statisticians as a group.

The last portion of this paper dealt with the influence of business on statistical methods. Previous portions discussed the influence of statistics in business indicating why the methods were tending to be regarded as aids to business management and giving specific instances in which they were of help in answering the questions, when?, where?, and how? If industries so vastly different as those mentioned in this discussion can find value in these methods, surely there is benefit to be derived from their application to some phases of almost any industry. The value of a statistical measurement or prediction, of course, depends on its accuracy, its dependability, the soundness of the logic underlying it, and the degree to which it is applicable in improving business policy and business action.

THE VERMONT COMMISSION ON COUNTRY LIFE

HENRY C. TAYLOR

I can best introduce the subject of the Vermont Commission on Country Life on this occasion by telling you of an incident which occurred a short time ago at the annual meeting of the Maine Development Commission.

At the opening session of that conference, Mr. Clarence M. Stetson, Chairman of the Maine Development Commission, described their group as progressive conservatives. When I was called upon to speak regarding the work of the Vermont Commission, I asked Mr. Stetson the difference between a progressive conservative and a conservative progressive. I told him that in Vermont, since the very idea of a commission implied desire for improvement or progress, we were using the Comprehensive Survey undertaken under the direction of the Commission as a means of providing a scientific basis for progress and that for this reason had classified our leaders in Vermont not as progressive conservatives but rather as conservative or scientific progressives.

The work of the Vermont Commission on Country Life differs from that of most other rural development or planning commissions in that it gives more attention to the life of the people. Furthermore, the Vermont Commission engages the efforts of some two hundred citizens in the undertaking which makes it less an official and more of a folk movement. Some development commissions appear to see first of all the land and to seek means of making use of the land. The Vermont Commission sees first of all the people and seeks ways and means of improving their well-being. The Vermont Commission is interested in the economic resources and their better utilization but this interest is avowedly subordinate to its interest in the quality of the life of the people. Attention is given to agriculture, summer residence, forestry, the wood-working industries and other

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industries as sources of income for rural people but even more attention is given to living conditions and the home and the community, rural health, educational facilities for rural people, the rural church, citizenship, and the culture, the ideals and the aspirations of the people.

The Physical Basis

To provide a full understanding of the physical basis of life in Vermont, a reconnaissance soil survey of the state was commenced last June which it is hoped may be completed by this time next year. A relief model is being constructed, and charts are being made which show climatic conditions in the various parts of the state.

The Human Factor

Recognizing that the land basis is only a potential factor and that the quality of the people determines the character of the civilization of a given region, particular attention is being given to the study of the population of Vermont. The quality of the residual elements of the native Yankee stock is being studied. The substitution of foreign race elements for the native stock is being studied from the standpoint of its effect upon the quality of the life of the Vermont town and upon the ideals which have made the name of the Green Mountain state respected and loved throughout the nation. This subject includes a study of the ways and means of caring for the handicapped people. The population studies include the Eugenics Survey which was in progress under the direction of Dr. Perkins for two years prior to the organization of the Vermont Commission. In fact, the Comprehensive Survey which is being conducted by the Vermont Commission grew out of the work of the Eugenics Survey. This doubtless explains why the human factor and the life of the people is receiving unusual emphasis in our undertaking. In other states and nations the use of abandoned land has been the starting point in the work of rural commissions. The hope is that their work will progress to the point where the life of the people will be central and the utilization of the land incidental to human welfare.

A Program for Agriculture

The Committee on Agriculture of the Vermont Commission is working on a production program and a marketing program for Vermont farmers with a view to better conditions of work and better incomes. The work of this committee is carried on essentially as a part of the work of the State Agricultural College and the State Department of Agriculture and has the cooperation of the U. S. Department of Agriculture.

The Committee on Agriculture is giving particular attention to the problems relating to the marketing of dairy products and to ways and means of reducing cost of milk production. The poultry industry is being studied by a special committee and attention is being given to the place of hogs, sheep, beef cattle and horse breeding in Vermont agriculture. A special committee is studying the place of the apple industry in Vermont and the areas in which the development of this industry gives promise of success. A special committee is studying the potato industry, another the maple sugar industry, another cash crops, and still another committee is giving attention to pasture and forage crops, with special reference to the relation to the dairy industry. A soil survey of the state is being made through the cooperation of the U. S. Department of Agriculture and the Vermont Agricultural Experiment Station. This is basic to the planning for all phases of agricultural development.

While the production of milk is of first importance in Vermont agriculture, farmers in this state have many other sources of income. In addition to the minor crop and livestock enterprise is the income from the farm woodlot and wages received from work on the roads, in the woodworking mills and in other industries. Part-time farming has an important place in Vermont.

Forestry

The Committee on Forestry with the State Commissioner of Forestry as an active member is working on a forestry policy for the state. Attention is being given to the question

of the extent to which national, state and town forests should be developed. Especial attention is being given to the ways and means of encouraging good forestry practice on the part of owners of large areas of timber land held by private interests. The state policy with respect to the taxation of forest land is being carefully considered. The farm woodlot or forest areas operated in conjunction with farming are an important supplementary source of income of many Vermont farms. From the wood-working industries large numbers of farmers receive income for timber or for labor which supplements the income from the farm and provides a satisfactory living for a family where the farm income alone would be inadequate.

Summer Residents and Tourists

Summer residents and tourists who come to Vermont each summer to share our favorable summer climate and enjoy our unsurpassed scenery require hospitality. The providing of these guests of Vermont with food and lodgings is an important source of income for rural people. The effect of tourists and summer boarders upon the life of farm homes and rural communities is being studied at first hand. An investigator has visited more than five hundred rural homes accommodating tourists or summer boarders, and her reports give a fairly accurate picture of the extent of this business, and its influence upon the equipment of the house, upon the farming enterprises, upon the education of the family, and the general effect good or bad upon the life of the home and the community.

Fish, Game, and the Preservation of Wild Life

A committee of interested citizens has been organized to study the problems and develop plans for the promotion of the good old sports of hunting and fishing and at the same time develop ways and means of preserving wild life in its various forms for those who delight in the music of the birds and the beauty of wild flowers. There is a large field in Vermont for work along this line, the results of which may be enjoyed by summer visitors as well as by Vermonters.

Land Utilization

In addition to these committees which are dealing with agriculture, forestry and summer residence, a committee on land utilization composed of representatives of these three committees has been formed. I am happy to find that in Vermont rural leaders look with satisfaction upon the return of land to forests unless that land is fitted for a type of farming which will support a satisfactory farm life. The purpose of the Land Utilization committee is to study conditions and formulate land policies relating to land regarding the use of which there is much uncertainty. Obviously, land utilization is not a problem where agriculture is the one use to which the land clearly should be put. Here developing efficient farm management is the problem. Neither is land utilization a problem where forestry is clearly the proper use. Here the problem is that of forest management. But in Vermont there are considerable areas where the use to which land should be put is uncertain. Land which was once used for farming but which is now being abandoned for that purpose because people can do better for themselves elsewhere is subject matter for the committee on Land Utilization. Should these lands return to forests? Should they at the same time be used for summer residence, or can there be found some new form of agriculture well suited to this land? In order to have a fact basis for considering these problems the Agricultural Experiment Station, the State Forester and the U. S. Department of Agriculture are co-operating in mapping the present land uses in fifteen towns where the right use of the land is in doubt. It is believed that these surveys will prove valuable in formulating rational policies for the utilization of the land resources of the state in a manner which will best promote the well-being of the people.

Let us now turn to the homes and the people.

Rural-Urban Relations

Rural life is a part of a larger life of which the trade center is the nucleus. Rural people and urban people have many common interests and may be even more helpful to

each other by taking thought. The Rural-Urban Relations Committee is undertaking the task of studying the community life both economic and social of the various trade areas in the state and pointing out the mutual benefits which arise from the interrelation of urban and rural people and the means of developing more helpful relations particularly in the common use of libraries, churches, schools, recreational facilities and the various public utilities.

Rural Home and Community Life

The living standards of rural people are being studied with a view to developing methods of initiating improvements in home equipment, home environment and in the community life which will bring the highest cultural influence into rural life. Some of the major conditions of a high standard of life are being considered by special committees on rural health, education, religion, citizenship and ideals, but there remain questions of the home life and particularly the recreational aspects of community life to which this committee is giving especial attention. The ways and means of improving the standard of living in the home are receiving the especial attention of the home demonstration agents in the state and the work of the Commission is closely allied to the extension work in this field.

The recreation of rural people is being studied particularly with a view to ascertaining what facilities are available and the way in which recreational activities are organized. It is recognized that rural people usually have adequate physical exercise but because of their relatively isolated life, it is particularly important to develop forms of recreation that will bring rural people together for social activity and group entertainment. The Grange, the Farmers' Clubs, chicken dinners, and other meetings of this character, play an important rôle in country life. The community band, the singing school, dramatic clubs and other activities of this sort are being studied. Baseball, hiking, skating and other forms of physical recreation are not being overlooked, and especial attention is being given to the extent to which the various families in rural communities participate in any of

the forms of recreation and entertainment which are available.

The hope is that this study may provide the basis for progressive planning for rural social and recreational activities.

Rural Health

The Committee on Rural Health is studying the extent to which physicians, nurses and hospital facilities are accessible to the people of rural Vermont. The physicians are found largely in sixteen cities and larger villages. Are these physicians able to meet the needs of rural people? Are rural towns in a position to support resident physicians? If not how can the rural health problem be solved? What is the place of the trained nurse in meeting the health needs of rural people? What is the place of hospitals or nursing centers in serving rural people? Obviously, these questions should not be answered without careful study. This study is in progress.

Education

The outstanding factor in determining the standards of culture and efficiency of rural people is education. A committee on Educational Facilities for Rural People is studying the school system of Vermont from the rural school to the universities, not forgetting the libraries and the clubs. The topography of the state and the sparcity of population in many of the rural areas gives Vermont a rural school problem which she must meet in her own way. The town unit of organization in Vermont has resulted in a large number of small libraries. The serious problem is, how to bring the efficiency of the modern librarian to these many libraries with their untrained, part-time librarians. This problem is being studied with the hope that some form of auxiliary service may be developed at moderate cost which will combine the advantages of the present small library conducted by a member of the community who is thoroughly acquainted with the people of all ages, and the benefits of the skill in book selection and cataloging of the trained librarian. Adult education in Vermont has made unusually fine progress in the fields of agriculture and home economics. A study is

being made of the various agencies which contribute to adult education in other fields with especial reference to cultural subjects. The grange, community clubs, music clubs, literary and discussion groups fostered by various agencies are being appraised and studied with a view of enhancing their effectiveness in rural life.

Religion

Religion as an agency in rural civilization is recognized as having played an invaluable rôle. The Committee on Religious Forces is attempting to evaluate the work of the rural church of today and if possible find some means of restoring it to its former importance. While the physicians have moved out of the rural districts, the minister has remained. The rural minister is ill paid and yet the rural people can not afford to pay more. Is the larger parish the solution? Is some different organization with local Sunday schools and central churches for preaching a better suggestion? The Roman Catholic church in Vermont has large parishes and the churches are full. The Protestants in Vermont have moved in the direction of eliminating duplication where there is room for but one church. The Baptist, the Congregational and the Methodist in particular have done noteworthy work in this regard. They deserve great credit and yet the problem of the rural church in Vermont is unsolved. The Roman Catholic church is reaching its constituency far better than are the Protestant churches. It is to be hoped that the present decline in interest in religion is purely temporary. An agricultural leader recently said to me that he considered religion an essential in the life of a people, that either the church must recover its function in this regard or else some other agency for promulgating religious influence must be developed. The Committee on Religious Forces is seeking a way to make the rural church effective.

Citizenship

The relation of the State to the people is a matter of great importance. Our civic rights have been secured only after centuries of struggle for liberty and equality as citizens.

Now that these rights have been secured without effort on the part of the present generation there is a tendency to take citizenship lightly. Many rural people fail to exercise their privileges as citizens, others shirk their obligations. The Committee on Citizenship of the Vermont Commission has made a careful canvass of two Vermont townships for the purpose of ascertaining the conditions which lead to neglect of civic activities and the conditions conducive to good citizenship.

The Conservation of Vermont Traditions and Ideals

While the work of the Commission was being planned and after the foregoing topics had been outlined, there was a feeling on the part of some that there yet remained an intangible something which was needed to complete the undertaking. It had been noted that while "Vermont Specials" are run to advertise marble and granite, slate and tale, machinery and cloth, sugar and syrup, lumber and wood novelties, the cow and her product and the scenic attractions of mountains and lakes, that in fact no Vermonter is at his very best when his thoughts are on this plane. It is when the Vermonter speaks of the great characters in Vermont history and the contribution of Vermont to the life of the nation that he rises to his full stature and shows that exultation which enters not into the souls of men who deal only in material things. This undefined something which has for more than three half centuries made the name Vermont thrill her people, whether at home or scattered to seed a nation, must not be overlooked in the work of the Vermont Commission. Thus it transpired that a committee has been organized to study Vermont Traditions and Ideals and to bring to the Commission that undefined spiritual reality which has been so effective in the life of the state and the nation, in order that it may have a definite part in shaping the plans for the years to come.

The Product

The Committees of the Vermont Commission are at work. The project was organized on a three-year basis beginning July 1, 1928. It is expected that the report will be completed

by June 1931. The major product, however, will not be the report but the attitude of mind of the two hundred participants on the various questions which relate to rural progress in Vermont. The final reports of the committees will constitute a program, many sided and for the long future, for rural Vermont. Even as the period of fact gathering goes on, the beginnings of such a program are gradually taking form, engaging the imaginations of the people and uniting them in common effort. The program will not wait for nor be dependent upon the publication of a report nor the passage of new laws by the legislature, important as governmental enactments will surely be. It will be a program made by the people, for the people and an integral part of the life of the state.

NOTES*

MR. WHELPTON'S POSITION AS TO GAINS FROM HOLDING COTTON

Mr. P. K. Whelpton has very properly called attention to the fact that on page 162 of "*Agriculture Reform in the United States*" he is inaccurately quoted as thinking that the farmer would gain by holding cotton when the price at harvest time is above the price of the previous harvest.¹ As a matter of fact, Mr. Whelpton draws from his data the conclusion that the farmer would do best to sell at once if the price is high and to hold if the price is low. His October prices are computed as percentages of a 5-year centered moving average. In "*Agricultural Reform*" the preceding year's price was used instead, because a centered moving average is indeterminate for the farmer at any given time.

The error of ascribing to Mr. Whelpton the policy of holding when prices are high in the fall came about from having noted some time in the past his statement early in his article as to the temporary rise of cotton prices in seasons when the October price was above the average, and his explanation therefore. This explanation was correctly restated in "*Agricultural Reform*" as follows: "When the price is higher than usual, buyers and sellers think it will rise higher yet, and the price is bid up" page 162). Although this rise in price does not last beyond January, on the average, being pulled down the following spring and summer, as a result, according to Mr. Whelpton, of increases in acreage the next spring, the temporary rise naturally suggested to the authors of this chapter in "*Agricultural Reform*" the possibility of a net gain from a certain amount of holding. When such a program was tested out, however, the costs and losses from any possible holding program were found to exceed the gains. This accords with Mr. Whelpton's conclusions, as would have been at once apparent if his article had been reread throughout.

Mr. Whelpton's figures also suggest a possibility not tested out in "*Agricultural Reform*";—that of holding cotton for a given net profit each year that the October price is below the price of the preceding October. A tentative trial on this basis indicates that out of thirteen such years from 1890 to 1927 (omitting 1914-20), there were eight years in which gains of one cent or more could have been made by holding not later than August first, but that the losses on August sales of the other five years would have exceeded the gains of the profitable years, whether the profit held for had been one cent, or two, or three, or more.

A. N. Moore,
H. I. Richards,
J. D. Black

Harvard University

* These notes are assembled in each issue of the Journal by Professor John D. Black, of Harvard University. See page 330 of the April, 1929, Journal for the announcement concerning these notes.

¹ Seasonal Fluctuations in the Price of Cotton, JOURNAL OF FARM ECONOMICS, October, 1925.

CORPORATE VERSUS AGRICULTURAL RATES OF RETURN
ON INVESTED CAPITAL

In "CROPS AND MARKETS," July, 1927, page 253, the following comparison appeared: "Considering the (agricultural) industry as a whole, irrespective of ownership, net income available after deducting operating expenses and a wage allowance for farm operators and their families amounted to 4.2 per cent compared with 5.2 per cent during 1925-26 and 6.3 per cent during 1919-20. Comparable rates for other industries did not decline during the calendar year 1926 and have been at least around 12 per cent during the last two calendar years, as shown by net profits of all corporations available for capital and management as percentages of their total capital investment."

The suggestion was made to members of the Bureau of Agricultural Economics that this comparison was not valid, that the data available in the Treasury Department indicated a much lower rate of earnings for corporations and also a decrease in 1926. No comparison was published in July, 1928, issue of CROPS AND MARKETS, but a reference was made to the 1927 statement. CROPS AND MARKETS, July, 1929, page 254, contains the following comparison: "These average returns for agriculture as a whole may be compared first with the rates earned on larger-than-average farms, for which data are given elsewhere in a table on Farm Returns 1928, with Comparisons. The net results shown there when related to capital employed indicate a return on the operator's net investment of about 5 per cent. They may also be compared with rates earned by industrial corporations. On an aggregate net worth of over \$23,000,000,000, net profits exclusive of payments for management for 900 corporations amounted to 12.1 per cent in 1928 and 11.1 per cent in 1927. See April, 1929 Bulletin of the National City Bank of New York."

Although these rates for corporate earnings seem to corroborate the earlier figures published, they cannot be accepted as representative of earnings by all corporations. This sample, according to the source cited, is based entirely on large (\$100,000 or over of gain or loss) corporations publishing profits. Published profits include income from dividends which is not income to all corporations; they do not change with the net income of the same corporations as returned for income taxation; and especially since only larger corporations publish earnings, they constitute a very poor criterion of changes in net income of all corporations. (See "Income Forecasting by the Use of Statistics of Income Data," Review of Economic Statistics, November, 1929, page 178.)

These attempted comparisons of rates of earnings raise four important questions.

1. *What are the approximate rates earned by all corporations and how do these compare with the data published in CROPS AND MARKETS?*

This question may be answered by presenting the data in the form of a table. (See next page.)

2. *Why is there such a difference between the two sets of figures, shown in Table 1, for corporations?*

The figures published in CROPS AND MARKETS for years 1921 to 1925 were based on a misinterpretation of the *Statistics of Income* data. They include

TABLE I.
THE RATE OF RETURN ON INVESTED CAPITAL

(First 3 columns including corresponding footnotes are taken from CROPS AND MARKETS; the last column is calculated as explained in footnote)

Year	Rate earned on all capital invested in agriculture ¹	Rate earned on operator's ² net capital investment ³	Rate earned by all corpora- tions ⁴	Approximate rate earned by all corpora- tions, other than life insurance companies filing income tax re- turns ⁵ (Mainly Calendar year)
	Per Cent	Per Cent	Per Cent	Per Cent
1921-22	1.3	-2.3	4.5	-1
1922-23	3.2	1.2	11.1	3.8
1923-24	3.5	1.6	13.0	4.8
1924-25	4.5	3.2	12.0	4.0
1925-26	5.2	4.4	13.0	5.3
1926-27	4.3	2.9	"	4.9
1927-28	4.7	3.6	"11.1	4.1
1928-29	4.7	3.7	"12.1	

¹ Capital as of January 1 in the period indicated. Values include land, buildings (dwellings and other), livestock, implements, machinery, motor vehicles, and an allowance for cash working capital. Table 3, Page 254, July, 1929, CROPS AND MARKETS.

Income after paying all operating expenses, including taxes, and allowing a wage to operators (ibid. Table 4.) but exclusive of residential value of dwellings. (ibid. Table 3)

² After paying all operating expenses, including taxes, and allowing wages to operators. Operator's net investment in agriculture is property actually owned, excluding that which is rented from non-farmers and that which is encumbered by indebtedness. (ibid. Table 4)

³ Depreciation not deducted. (Table 9, Page 254, July, 1927, CROPS AND MARKETS.)

⁴ Calendar year net profits including compensation to officers (after deducting depreciation) as percentages of "fair" (market) value of capital stock of all corporations estimated by the United States Treasury Department at 75.4 billion dollars in 1921, 75.8 in 1922, 81.8 in 1924 and 95.2 in 1925. (Table 9, page 254, July, 1927, CROPS AND MARKETS.)

⁵ Available data indicate that at least the same percentage was earned in 1926 as in 1925. (Table 9, Page 254, July, 1927, CROPS AND MARKETS.)

⁶ As cited from Bulletin of National City Bank.

⁷ Rates calculated from data in *Statistics of Income*. (a) Income equals statutory net income, less statutory deficits, less income taxes, less corresponding data for life insurance companies plus tax exempt interest. Total income is slightly overstated, since life insurance companies which do not report assets on Schedule K of income tax return receive some of the tax exempt interest. For explanation of the income data, see any recent volume of *Statistics of Income*, and also *Income Forecasting by Use of Statistics of Income Data*, Review of Economic Statistics, November, 1929, Pages 179-93.

(b) Invested capital in 1927 estimated by adding *par* value of common and preferred stock and net surplus as tabulated in the *Statistics of Income*, increasing this sum 1% for incomplete tabulations, and making the total equal to 95% of invested capital. The other 5% equals the estimated value of the *no par* common stock. Data for other years are estimated from capital reinvested (not paid out as dividends), *Statistics of Income*, and amounts of stock issued for new capital from *Commercial & Financial Chronicle*. These estimates for other years were checked by using incomplete tabulation from capital stock tax returns and Schedule K as published in *Statistics of Income*.

compensation of management and dividends, and apparently neglect deficits. Also incomplete figures on fair value of capital stock were used as the measurement of investment capital. The figures for 1927 and 1928 are based on a sample, the non-representativeness of which is made clear in Tables 2 and 3 below and the related discussion.

3. Are the data for agriculture and corporations comparable?

(a) Invested capital for agriculture is measured by market value of land,

buildings, etc. Land values in theory and practice include capitalized changes in expected future earnings. Invested capital for corporations is measured by par value of stock plus surplus and therefore very largely disregards future earnings, and to some extent the intangibles known as good will and the going concern value. To be comparable, capital invested by corporations should be measured by market value of securities, a difficult figure to obtain and perhaps meaningless if secured. However, the recent rise and fall in stock prices correspond somewhat to the land boom ten years earlier.

(b) Are deductions comparable?

(1) Salaries or wages of managers or operators are deducted in both cases. Apparently the Department of Agriculture tries to make a distinction between wages of farm operators and rewards for management. Although it allows each farm operator (and family) yearly wages somewhat comparable to those of hired farm laborers, whether or not the operator devotes his full time to farming, the tables are headed "including rewards for management."

Whatever be the rewards for management of farms, comparability of data cannot be secured by including compensation of officers of corporations as part of the net income. Such payment may be much larger than the wages allowed farm operators, but correctly so, since they are really wages for a valuable type of service. The profits from good management of corporations accrue mainly to the stockholders in form of dividends and are not correctly represented by the compensation of officers. In 1924, the last year in which compensation of officers was tabulated from income tax returns, the average deduction was \$6,314 per return. But many of these returns were consolidated, representing two or more corporations; and most corporations have two or more officers or managers.

(2) Depreciation has been deducted in both cases. Corporations have made liberal deductions in filing income tax returns. Contrary to Note 4, Table 1, depreciation, although not called by that name, is in reality deducted in calculating income to agriculture. Since the cost of repairs to maintain buildings is not known, an allowance of about 5 per cent of inventory value is deducted as expenses. The estimate of expenses for use of machinery is based on about 10 per cent of inventory value plus same percentage of capital outlays for machinery during the year. Such charges are apparently supposed to maintain capital intact and therefore if large enough really cover depreciation whether or not it is called depreciation.

(3) Allowance for inventory changes may or may not be comparable. No allowance for changes in value of capital assets is made in either case. Corporations deduct inventory losses on goods for sale, but do not include inventory gains. No direct allowance is made for inventory changes in crops and animals produced for sale. Since 1921 there have been no important inventory changes. However, if corporations had not deducted large inventory losses from the 1920 earnings, the rate of returns in 1921 would appear much lower.

(4) Deductions for taxes are not exactly comparable. A large part of farm taxes is for schools for the operators' own children. None of the taxes paid by corporations is anywhere nearly as directly and specifically a payment for benefits received. Another large portion of farm taxes is for roads

which tend in many cases to increase the value of property. Corporations are not permitted to deduct taxes which tend to increase the value of capital assets. A small portion of the property taxes paid by farmers should not be deducted from farm income, but charged to living expenses, as it corresponds to property taxes paid by employees of corporations.

(5) The question of allocating expenses between business and living does not arise in corporation data. This problem may be very significant in making deductions for agricultural expenses in such cases as cost of maintaining the farmer's automobile.

(c) Aside from differences in deductions, net income is not exactly comparable.

(1) Farm incomes do not include an attributed rental value of residences, although the value of such buildings is included in invested capital.

(2) Estimated net farm income is only income from farm operations plus an attributed cash value of food and fuel consumed on the farms, while the income reported by corporations includes other sources of income, the most non-comparable of which is gains on sale of capital assets measured from 1913 or year of acquisition, corrected for all depreciation charged off in the meantime.

4. *Should rates of returns in agriculture be compared with rates of return for all corporations, or only with rates of return for small corporations? i.e., should not agriculture as an industry conducted in small units be compared only with small corporate enterprises?*

According to the 1927 *Statistics of Income*, 69.67 per cent of all corporation returns showed statutory net incomes or deficits between a minus \$5,000 and a plus \$5,000. These corporation returns reported a statutory net income of \$268,748,591, income taxes of \$6,822,590 and statutory deficits of \$172,116,764, making the statutory net (less deficits) after income taxes of only \$89,809,237, or an average of \$271 per return. However, 10.39 per cent of the returns were filed by inactive corporations reporting no income data. Such corporations may correspond to abandoned farms; but if excluded raise the average income per active corporation return of this group to \$319. Extending the limits of size to \pm \$10,000 of statutory net income does not change these averages more than \$10.

It is conceded that net-income class is not a good measurement of size, as some large corporations measured by gross volume or invested capital earn small incomes, while some small corporations earn relatively large incomes, and fractional year returns may produce meaningless small corporations. However, no other classification by size is made from income tax returns. And experience with the data indicates that the error introduced does not affect the conclusions seriously.

Prior to 1926 no classifications of deficits according to size were made in *Statistics of Income*, and in that year the smallest class was \$25,000. This may include corporate enterprises too large for comparison with agriculture. However, data for two years—1926, a fairly good year; and 1927, a year of mild depression—indicate relative stability of the averages and the percentages under changing business conditions.

TABLE 2.—SIZE OF CORPORATION RETURNS MEASURED BY INCOME
OR DEFICITS

	1926	1927
Total number of corporation returns	455,320	475,031
Total statutory net income less tax	\$6,274,895,844	\$5,879,470,757
Returns between \pm \$25,000		
Number	407,374	428,837
Percentage of total number	89.47%	90.28%
Statutory net income less tax	\$197,362,140	\$190,853,835
Percentage of total statutory net income	3.15%	3.55%
Average statutory net income per return	\$484	\$445
Returns between —\$25,000 to —\$100,000 and +\$25,000 to +\$100,000		
Number	34,628	32,699
Percentage of total number	7.61%	6.88%
Statutory net income less tax	\$478,340,052	\$343,413,926
Percentage of total statutory net income	7.62%	6.38%
Average statutory net income per return	\$13,814	\$10,502
Returns of \pm \$100,000 or over		
Number	13,318	13,495
Percentage of total number	2.92%	2.85%
Statutory net income less tax	\$5,599,193,152	\$4,845,202,996
Percentage of total statutory net income	89.23%	90.07%
Average statutory net income per return	\$420,423	\$359,037

Even extending the limits of size to \pm \$25,000 produces only an average statutory net income of about \$465, which apparently is not far out of line with the average income per farm.

The data presented in CROPS AND MARKETS, July, 1929, page 252, on farm returns by income classes indicate a similarly skewed distribution, but within a much smaller range of incomes. The mode appears to be around zero income, while only about 3 per cent of the number report \$5,000 or more of income.

Obviously the 3 per cent of corporation returns reporting 90 per cent of the income do not represent the 90 per cent of returns which report only about 3 per cent of the income. The sample of 900 corporations used in the National City Bank bulletin, and previously mentioned, is taken from this 3 per cent of all returns and therefore cannot be used as representative of all corporations. That the sample of 900 may not even represent the 3 per cent is indicated by the fact that while this group of large returns showed a decrease of 13.5 per cent in net income less deficits from 1926 to 1927, the published profits of the sample showed only a decrease of 1.6 per cent.

The classification of data from Schedule K by net income classes as contained in the 1926 *Statistics of Income*, pages 16, 21, and 360, permits a partial calculation of rate of return on invested capital according to size of net income, ignoring value of no par common stock, tax exempt interest, and income of life insurance companies, which do not report on Schedule K. These discrepancies cancel for all corporations, but perhaps not for separate classes.

TABLE 3. RATE OF RETURN ON INVESTED CAPITAL BY CORPORATIONS
IN 1926

Corporation returns reporting		Rate of return Per Cent
Net income—Deficits	.....	7.5
Under \$5,000	.....	3.0
\$5,000—\$10,000	.....	5.9
\$10,000—\$50,000	.....	7.5
\$50,000—\$100,000	.....	8.6
\$100,000—\$250,000	.....	8.9
\$250,000—\$500,000	.....	9.4
\$500,000—\$1,000,000	.....	9.4
\$1,000,000—\$5,000,000	.....	8.5
\$5,000,000 and over	.....	10.0
Average of all returns reporting net income	.....	8.5
Average of all returns	.....	4.9

This classification of rates of return by income classes does not prove absolutely that the small corporations reporting income earn low rates, since some large corporations measured by invested capital may have been temporarily in the lower income groups; but the almost uniform increase in rates of returns as the income classes become larger, and the data presented in Table 2, furnish very strong evidence that the majority of American corporations are small and earn only moderate rates of return. It is highly probable that the true rates of return in agriculture and in small corporate business are nearly similar. The advantage may be with agriculture rather than with other small enterprises.

The foregoing data show that there is very little spread between the rates of return earned in agriculture and by all corporations. They also indicate that the spread between small corporate and large corporate enterprises is greater than between all agriculture and all corporate enterprises. It is entirely possible that the methods of estimating money income to agriculture undervalues the real living obtained from the farm as a home. Small enterprises whether privately or corporately owned may produce psychic income which cannot be measured in dollars and cents. For instance, there is the freedom of being one's own boss and the possibility of greater returns (a good crop, large sales, etc.) at some time in the future.

It may be impossible to make satisfactory comparisons between agriculture as an industry and other forms of enterprise because agriculture is more than a business—it is a way or means of living. These two aspects of present farming are as inseparable as joint costs. It may also be practically impossible to measure the relative incomes of groups of people with different standards of living. Although the tables in CROPS AND MARKETS indicate that after making numerous dollars and cents deductions, the farm operator receives only about half as much as a factory employee, the data prove nothing as to the relative well-being, and should serve only as the starting point for making comparisons. How has the farmer lived during the year and what has he left to show for it as compared to the way other people have lived and what they have saved?

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ON CERTAIN MATHEMATICAL PROPERTIES OF DEMAND CURVES OF CONSTANT ELASTICITY

The elasticity of demand for a particular product is important in determining the total value of crops or marketings of different quantities, and the possibilities of gain from storage operations and stabilization programs. Formulas are developed below to determine for the special case where the demand curve is of constant elasticity, the effect upon price and the total value, of changes in the quantity, and for comparing the effect on the total value of a variation in the quantity between two periods as compared with the same total quantity divided equally between the two periods. The latter shows that with an inelastic demand an unequal division of quantities has a greater total value than an equal division of the same total quantity and that this difference increases as the elasticity becomes less and as the inequality of the division is increased. The contrary is true of elastic demands, although less markedly.

Starting with Marshall's definition of the elasticity of demand, $xy^n = K$, where x is the quantity, y the price, n the elasticity, and K a constant, the following algebraic manipulation is possible:

The effect of a given change in x on V , the value of the total quantity can be determined from the following two definitions.

$$xy^n = K \quad (1)$$

$$xy = V \quad (2)$$

$$\begin{aligned} \text{Then } x^n x^{1-n} y^n &= K \\ V^n x^{1-n} &= K \\ \frac{V^n}{x^{n-1}} &= K \end{aligned} \quad (3)$$

If now x is modified by a factor a we have from (3)

$$\frac{(a^{(n-1)/n} V)^n}{(ax)^{n-1}} = K \quad (4)$$

Thus V changes by a factor $a^{(n-1)/n}$ for a given change, a in x .

Increases in x cause increases in V when n is greater than 1, cause decreases when n is less than 1, there being no change if $n = 1$. The rate of change of V is less than that of x when n is greater than $1/2$, is greater when n is less than $1/2$, the two rates being equal when $n = 1/2$.

The effect on y , the price, of a change a in x is obtained by rewriting equation (1) in the following form.

$$ax \left(\frac{y}{a^{1/n}} \right)^n = K \quad (5)$$

Thus y decreases by a factor $1/a^{1/n}$ as x increases by a .

For example, if x were doubled, the proportion which V and y would be of their original values is shown in Table 1 for different elasticities of demand.

The effect on the total value of a variation in the quantity between two periods as compared with the same total quantity divided equally between the two periods, may also be computed. Let V_0 , Y_0 , and x_0 refer to the value, prices and quantity respectively in each of the periods when the quantity is equally divided. Let V_1 , Y_1 , and x_1 refer to the period of smallest quantity and V_2 ,

TABLE 1.—PROPORTIONATE VALUES OF THE TOTAL QUANTITY AND THE PRICE WHEN THE QUANTITY IS DOUBLED

	Elasticity of demand,							
	1/3	1/2	2/3	1	1 1/2	2	3	n
Proportion of the original value of V when x doubles.....	.25	.50	.71	1.00	1.26	1.41	1.59	2 (n-1)/n
Proportionate value of y when x doubles ¹.....	.125	.25	.36	.50	.63	.71	.79	(1/2)1/n

¹ The change in y is always $1/n$ of the change of V .

Y_1 and x_2 refer to the period of largest quantity when the quantities are unequally divided.

$$\text{Let } 2V_0 - V_1 - V_2 = 2x_0y_0 - x_1y_1 - x_2y_2 = Q \quad (6)$$

which with the use of the formulas given earlier can be reduced to the form

$$Q = 2x_0y_0 - y_0\sqrt{x_0^{n-1}x_1} - y_0\sqrt{x_0^{n-1}x_2} \quad (7)$$

$$\text{or } Q = x_0y_0 \left[2 - \left(\frac{x_1}{x_0} \right)^{1/n} - \left(\frac{x_2}{x_0} \right)^{1/n} \right] \quad (8)$$

Examining this equation we find that when n equals 1, Q equals 0 and the total value is the same regardless of how the quantities are divided. When n is less than 1, Q becomes negative and the unequal division of quantities produces a larger total value than an equal division. When n is greater than 1, Q is greater than 0 and the unequal division of quantities produces a smaller total value than an equal division. The advantages or disadvantages become greater both as n deviates further from 1, and as the difference between the proportion of the quantities marketed in the two periods is increased. The proportion by which the value is changed by dividing the quantities unequally between two periods over an equal division of the quantities in the two periods, is given in Table 2 for different values of n .

TABLE 2.—PERCENTAGE INCREASE OR DECREASE IN THE VALUE OF AN UNEQUAL DIVISION OF QUANTITIES IN TWO PERIODS OVER AN EQUAL DIVISION OF THE SAME QUANTITIES IN THE TWO PERIODS UNDER DIFFERENT ELASTICITIES OF DEMAND AND PROPORTIONATE DIVISIONS

Proportions of crop in terms of percentage of quantity in period of equal division	Elasticity of demand, n									
	1/4	1/3	1/2	2/3	3/4	1.0	1.5	2.0	2.5	3.0
100 and 100..	0	0	0	0	0	0	0	0	0	0
95 and 105..	+3.3	+1.5	+6	+4	+1	0	-1	-1	-2	-2
90 and 110..	+11.9	+3.9	+2.0	+7	+2	0	-4	-4	-6	-6
85 and 115..	+27.2	+13.5	+4.5	+1.7	+1.0	0	-6	-7	-8	-9
80 and 120..	+48.1	+23.9	+8.0	+3.2	+1.7	0	-9	-1.0	-1.1	-1.2

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EFFICIENCY, PRICE, AND INCOME

Since the collapse of farm prices in 1920 there has been considerable discussion and controversy concerning the relation between farm efficiency and farm income. Some have said that the farmer, since 1920, has been "too efficient." Others have replied that the assertion is "quite without foundation." Such opposite opinions may rest upon contrary meanings of the word *efficiency*.

A popular meaning of the word would make the difference between income and outgo (cost) the measure of efficiency. Stated differently, if one does not get what one wants, inefficiency is the reason. Following this definition, a farmer who buys similar cost goods at lower prices and sells similar farm products at higher prices than his neighbors would be called more efficient. But such a meaning is a mixing of concepts that are different. It is a mixing of efficiency and scarcity (bargaining power).

Professor John R. Commons, in his volume "Reasonable Value," has made a keen analysis of the distinction between efficiency, price, and income. Let us summarize the views expressed in this volume for our meaning of efficiency.

Efficiency in itself has nothing to do with prices. It is merely a ratio between the output of use-value (not income) and the input of mental and manual human energy (not cost). The quality and quantity of the output of use-value is measured by grades, pounds, bushels, tons, bales, etc. The input of human energy (mental and manual) is measured by man-hours (not dollars). The man-hours is the average man-hour. The mental and manual energy of individuals varies greatly; but for measuring the efficiency of a group or class we must count each individual as one and average their energy. Hence the efficiency of wheat producers is the output (bushels and grade) per man-hour. Appleby invented the self-binder and thereby enormously increased the efficiency of human labor in the production of wheat. The question as to what constitutes sound public policy in the matter of paying Appleby for his idea is unrelated to the measurement of efficiency as such. For the purpose of computing the efficiency of wheat producers, Appleby's labor time is merely averaged with that of wheat farmers and people engaged in the manufacture of wheat-producing implements and equipment.

The measurement of efficiency is always comparative. If we wish to compare the personal efficiency of two farmers we must eliminate all differentials except the two personal efficiencies we are comparing. That is to say, the two farmers must be given the same quality and quantity of land and equipment with which to work. Under such circumstances, the difference between the output of product (use-value) per hour of labor is the difference between the efficiencies of the two farmers. In the vast majority of cases it is not an easy matter to eliminate differences in land and equipment, but such differences must be approximately eliminated if personal efficiency is to be compared.

Efficiency is always ultimately output per man-hour, because the output or use-value is *produced* only by man-hours. Nature *produces* nothing. Nature just happens. Nature does not *aid* man. She appears to him as different degrees of resistance to labor power. There is always a *purpose* back of efficiency. That purpose is use-value. Nature has no purpose.

Only a small portion of farm output is farm income. During the early period

of virtually self-sufficing agriculture, the bulk of farm output was farm income; but not so today. Farm income does not result from efficiency alone. It is a functional relation between efficiency and scarcity (bargaining power). Subjectively, scarcity is marginal utility. Objectively, it is price. Price (scarcity) like efficiency is also a ratio between two objective, measureable quantities. It is a ratio between the number of dollars paid for a crop (demand) and the number of bushels of a crop bought (supply). Use-value or output is entirely objective. Use-value per unit of output does not change with a change in the total quantity of output. But scarcity-value (price) per unit varies inversely with the change in total quantity of output.

Whereas efficiency is output per man-hour, scarcity (price) is dollars per unit of supply. Thus the man-hour measures efficiency, and the dollar measures scarcity. Efficiency produces use-value; scarcity (price) distributes it. Efficiency is to production what price (scarcity) is to marketing. Efficiency means only a *rate* of output per unit of labor time and is different from the *total quantity* of output during a period of time. Efficiency affects price only as it affects the total quantity of output. Farmers, both individually and collectively, are highly interested in increasing output per unit of input even at the present time; but, collectively, they do not want too much input. They must regulate the total quantity of output by regulating the total quantity of input. Farmers collectively can raise their incomes by increasing their efficiency only when the increased efficiency does not cause a "surplus."

No class of producers is ever too efficient as long as the most available alternative for freeing itself from the undesirable effects of surpluses is to produce less by working fewer hours. Viewing the question from the standpoint of the farmers' collective interests and adopting the above described meaning of efficiency, the question of whether the farmers since 1920 have been too efficient becomes a question of fact. Have the agricultural colleges, the inventors, and the manufacturers of farm machinery enabled farmers to work fewer hours in producing a desirable total quantity? Or have they contributed to the production of the surplus? Farmers should reduce the total quantity of output, not by being less efficient, but by working fewer hours and thus get for themselves the gains of efficiency.

But is this what happens? Since 1920, the output of milk per unit of feed consumed has increased about 10 per cent.¹ If this result has been obtained only by proportional increase in direct or embodied labor (equipment) the efficiency of milk production has not increased. But the figures undoubtedly indicate an increase in efficiency. The total output of milk has also been increased. The Farm Board says there is a surplus of milk. To what extent is this surplus the result of increasing output per man-hour (efficiency), and to what extent is it the result of an increasing quantity of input (man-hours)? We can only ask the question. Both influences are at work. The output of milk has increased much more than the number of milk cows. This would seem to indicate that a change in efficiency by increasing the output without reducing the input was the greater influence.

Efficiency aids may be used to increase the output of a given quantity of

¹ "Do We Need More Farmland" (page 9)—by Dr. O. E. Baker.

input, or they may be used to reduce the input for a given quantity of output. There is reason to believe that the former use is more general. If farmers had made use of the efficiency aids by working less and adding nothing to the total quantity of output (thus protecting prices), the charge that increased efficiency had aggravated the farmers' present economic difficulties would be indefensible. But, to the extent that the increased output per man hour (efficiency) has caused an increase in total quantity of output, to that extent the assertions of those who say the farmer has been too efficient are not "quite without foundation." They mean only that, *under the circumstances*, the farmers' aggregate income would have been greater had their efficiency been less. If total output is too great and cannot be reduced by working less hours, output per man-hour is too great. To say that the farmers' income would have been greater since 1920 had they been less efficient, or had they been able to reduce their efficiency, is not to deny that they would have been still happier had they been able to reduce their output by working fewer hours and thus retain, or even increase, their efficiency. It means only that changes in efficiency have (necessarily or unnecessarily) adversely affected bargaining power. It is idle to talk about reducing total output by reducing efficiency, but it is quite proper to question the desirability of increases in efficiency if, and when, such increases cause a reduction of bargaining power.

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THE SUMMER CONFERENCE OF "THE AGRICULTURAL ECONOMICS SOCIETY" OF GREAT BRITAIN

The agricultural economists of the British Isles held their fourth annual summer meeting at Downing College, Cambridge, on June 21 to 24. The published *Proceedings* have just appeared. The society at that time had 149 members, of whom eleven were from outside the British Isles. About fifty attended the conference.

The general subject of the conference was the agricultural depression in the British Isles, which comes nearer to being acute now than at any time save during the World War. As was pointed out by Mr. R. J. Thompson in his presidential address, prices of farm products in England started declining again in 1925, along with the all-commodities average, and for the year 1928 stood at 147 (1913 = 100). The 1929 index will be around 142, which is very close to that of the United States. The indexes for 1920, '21, '22, '23, and '24 respectively were 292, 219, 169, 157, and 161. It thus appears that the course of prices of farm products has been considerably different in England than in the United States. The difference can in general be summarized by saying that in England, prices have declined steadily since 1920, except for a little lift in 1924, whereas in the United States they dropped rapidly in 1920-21, rose to 1924, and have remained at about the 1924 level since.

This difference has an important relation to the "general price level" in

the two countries. In England, the farm-products average and the all-commodities average have kept closely together, the former lagging in its descent about a year behind the latter. In the United States, speaking now in terms of wholesale prices, the farm-products average has risen, whereas the non-agricultural average has declined. The latter has behaved much like the all-commodities average in England, although declining more slowly. In the all-commodities average in the United States, the agricultural and nonagricultural averages have almost exactly offset each other, until a few months ago when the business recession set in.

Mr. Thompson in his address very properly assigned to monetary influences an important place in the recent course of agricultural prosperity in England. The effects of the depreciation of the pound during the war, and its re-establishment afterward, have profoundly affected British agriculture as well as British industry. Mr. R. R. Enfield, of the British Ministry of Agriculture, in his paper devoted exclusively to the monetary phases of the depression, and giving indeed an excellent exposition of them, went somewhat further than Mr. Thompson in this respect, although probably not so far as in his book *The Agricultural Crises* (1924), which American economists will readily recall. Mr. Enfield goes so far in his paper as to say that the "long periods of ups and downs which have been so marked a feature of British agricultural history (since 1800), are capable of an almost exclusively monetary interpretation," and then proposes that we accept this view of the present and the immediate future. The solution of the problem of British agriculture is therefore to be looked for in "intelligent international management" of the world's supply of money.

Earlier in his paper, however, Mr. Enfield pointed out the disparity between agricultural wages and prices of farm products as the "fundamental economic maladjustment in British agriculture to-day," the index of agricultural wages being at 176 in 1928 (Mr. Thompson placed it at 185); and shortly before had referred to "resistances" that had been deliberately set up which were preventing such maladjustments from "flattening themselves out." The facts are that not only has the Agricultural Wages Board, established in 1924, accepted and enforced rates twice as high in money units (considerably higher in purchasing power) than those of the pre-war period; but has also shortened the working hours, making either 50 or 52 hours per week the standard in most sections, with extra pay for overtime. It would seem to an observer that Mr. Enfield has here built up a good case for calling the establishment of the Wages Board an important cause of the agricultural depression, considered from an employer's viewpoint. In explaining economic change, those things are causes which are interjected into the situation as new elements. Even the war level of wages must not be explained as a largely monetary effect.

Another large part of the program was given over to a discussion of agricultural conditions in various part of England, Wales, and Scotland. Mr. Skilbeck and Mr. Messer, of the Agricultural Economics Research Institute of Oxford, presented an interesting paper on this subject, and then thirteen of the "Advisory Economists" from the different "provinces" into which England, Wales, and Scotland have been divided for purposes of agricultural economics research, each reported upon conditions in his province. These men, in con-

trast with Mr. Enfield, attempted to explain conditions in their areas in terms not of one general cause, but in terms of markets and prices of particular commodities, prices of farm supplies, wages, conditions of soil and climate, and farm organization. Mr. Thompson had presented a table in his paper showing index numbers of farm prices of the different farm products. For the crop-years 1927-28 and 1928-29, these averaged as follows (1913 = 100): fat cattle, 133; fat pigs, 134; small grain, 136; eggs, 152; fat sheep, 155; dairy products, 164; fruits and vegetables (including potatoes), 168; wool, 176 (1927-28 only). It turned out, when the reports from the different areas were in, that they were suffering or prospering pretty much according to which of the foregoing products they produce. Dependence upon hired labor is another factor—in those sections which grow crops for sale, or to fatten livestock, using much hired labor, the losses have been most severe. Type of soil, climate, and topography figure in the explanation because they determine the type of farming. Arable farming on heavy clay land, or on very light soils, whether the crops are grown for sale or to fatten livestock, is least prosperous, whereas the grazing regions, especially if devoted to dairy cattle or sheep, have prospered most. The rainfall in the heavy clay arable sections of eastern England is much less than in western England, which makes pasture-farming a difficult alternative. The same is true of the lighter soils of central England. On the basis of geology and soil formation alone, Sir Danpier-Wetham, the new president of the society, had marked off 6 per cent of the farming area of England as suffering severe depression; and Mr. Thompson added 11 per cent more as suffering moderate depression.

Some difference of opinion developed as to the prosperity of agriculture in southwestern England. Evidence presented by Mr. Skilbeck and others indicated reasonably prosperous conditions there; but the Advisory Economist, Mr. Long, reported the results of a farm business survey—apparently of the general type formerly so prevalent in the United States—which indicated that the operators were averaging only the prerequisites attained from the farm as a reward for their management (apparently little or no "labor income" as that term is commonly defined). These farms averaged 128 acres in size, and hence are of the family type that commonly yield very small "labor incomes" in the United States. Of more significance is the fact that only eight of the 205 farmers had motor cars.

Another difference of opinion very evident was as to the value of the farm accounts that all of the Advisory Economists are collecting. Several of those reporting considered that the number of records which they are obtaining does not constitute enough of a sample to warrant any generalizations, and based the reports for their provinces mostly on other information. In some of the provinces, however, the program has been to obtain inventories and balance sheet statements from a considerable number of farms—as is done in Illinois in this country. Mr. J. S. King is developing a very careful system of this sort for the whole of Scotland. He is apparently looking carefully into the sampling aspects of his undertaking, a phase of such a program that is commonly slighted.

This leads to the general observation that the British Ministry of Agriculture has not yet concerned itself with the compilation of statistics of

income and expenditures for the different sections. It would seem that such a service is greatly needed the same as in the United States. Dr. Stine reports that the task is nearly completed for this country.

Skilbeck and Messer attempted to get a measure of conditions in the various provinces by sending out a questionnaire to a large number of landlords asking for reports on "Notices to Quit" and "Rent Reductions." The two were found to be very highly correlated, and apparently gave as good a picture of conditions as would movements of land values in the United States. The Notices to Quit and Rent Reductions were correlated positively with percentage of arable land in the farms, and also with the size of the farm. Both indicate the effect of high wages on English agriculture.

A paper by Ashby and Davies of University College of Wales presented an interesting attempt to measure the change in output per worker in England between 1871 and 1921, and from 1924 to 1928, using the type of measure with which Professor Ashby has already made us familiar—"task per person." His estimate is a 30 per cent increase from 1871 to 1921, and a 5 per cent increase since 1921. Another paper by Professor Ashby discussed certain population and standard-of-living aspects of British agriculture, one particular of which is an increasing percentage of persons fifty-five years old and over. One welcomes Professor Ashby's insistence that farm economists should not interpret "economic" advantage to mean mere pecuniary advantage.

In another paper, Mr. J. R. Maxton, stationed with the Research Institute at Oxford, did an excellent job of exposing the fallacy in the talk so freely engaged in in England, especially by Conservatives, about England's being used as a dumping place by all the other countries of the world. He pointed out that only one country, namely Australia (under the "Paterson plan") has any scheme in operation under which agricultural produce is sold for less abroad than at home, and that none is selling its low-quality produce in England.

An item of much interest concerning English agriculture is that in 1925 the average rent per acre reported for "mainly arable" holdings was only 26s. per acre, as contrasted with 36s. for "mainly pasture" holdings, and 29s. for "mixed" holdings. To be considered along with this is the fact that the arable area of England and Wales is steadily declining, and has been ever since 1870. It is safe to say that it is the preponderant opinion of British economists that such a development is healthy and should not be checked, that British farming for the most part has comparative advantage in grass farming, as well as distinct comparative disadvantage in producing small grain under modern conditions. English agriculture is developing along two lines; away from the cities, more land in grass; and near the cities and in other favored localities, more production of fruits and vegetables and milk for the home market.

Economists in the United States will note with surprise the low price of beef cattle in England. The explanation is that the British market is wide open to Argentine beef, which has been very low in price during the "meat war" being waged there. The British working people are consuming large quantities of this beef, with the result that the prime quality type of beef produced in England has considerably exceeded the demand for it at profitable prices.

Another item of interest relates to Mr. Henry Ford's plans to develop a tractor that can be used to work the very heavy soils of the eastern counties, and thus bring them back into crops. He is maintaining a farm just east of London where he is testing out machines and farming methods. There are many in England who believe that a farm of several hundred acres, large enough to use a sizable tractor unit, is bound to develop as a means of escape from present high wages. A visitor from the United States has difficulty in understanding how English farmers pay such large labor bills and still make farming pay. The 300,000 farm operators in England and Wales employ over 700,000 hired laborers. About thirty workers are engaged on each 1,000 acres of land in crops and grass.

In conclusion, the writer can assure any agricultural economist from the United States who is visiting England that he will be warmly welcomed at any meeting of the British society. A letter to Mr. J. S. King, Yorkhill Buildings, Queens Street, Edinburgh, will secure all the particulars as to place and time of meeting and other arrangements.

John D. Black

BOOK REVIEWS

American Produce Markets, by Henry E. Erdman. Boston: D. C. Heath & Company, 449 p. \$3.40.

This book by Dr. Erdman, the second volume of the Heath agricultural economics series, is devoted exclusively to the marketing of fruits and vegetables and dairy and poultry products. The author finds the essence of the marketing problem to be "the focusing of supply and demand in such a way that each of the millions of scattered consumers has an opportunity to buy such of the nation's products as he desires at approximately what the goods are worth to the community at large." On the grower's side there is an increasing geographical specialization in production for distant markets, while on the consumer's side there are frequent variations in demand due to vagaries of preference, weather changes and the like. From these arise many problems of physical transportation and commercial exchange.

The first half of the book describes the commercial functions, the physical operations, fees charged, problems and weaknesses of our present day marketing system under the headings of country markets, wholesale markets, auctions and exchanges and retail markets. The remaining chapters are devoted to a cross-section view of trade integration, grading, standardization, transportation, storage, market news, costs, cooperation and progress in marketing improvement. In regard to the latter, Dr. Erdman stresses the slow "evolutionary" change of most business practice, but warns against the retarding influence of custom and vested interest.

The author's descriptions of marketing processes and functions are replete with concrete illustrations which reveal a grasp of detail over a wide field. A number of individual examples of advance in marketing technique and organization are scattered throughout the book although the summing up in the final chapter consists principally of rather disappointing generalizations.

The book is well illustrated with pictures and diagrams, but it is slightly marred by a number of misspelled names and some curious inversions of chart captions.

Walter P. Hedden.

Port of New York Authority.

The Tax Situation in Illinois, by Herbert D. Simpson. Chicago: The Institute for Research in Land Economics and Public Utilities, Northwestern University. 1929. pp. 104, \$1.50.

Students of farm taxation have long realized that the farm tax problem was only one aspect of a larger problem that affects all property owners. They have never had the whole problem described to them more graphically than in *The Tax Situation in Illinois*. Dr. Simpson has achieved that rare combination which marshalls a long array of scientific fact in a style which is as compelling reading as the latest thriller. Those of us who write station or department bulletins in any field might well sit at Dr. Simpson's feet and try to make our writing as interesting.

For the past three years Dr. Simpson has been studying the assessment of property in Chicago and to his forceful presentation of the conditions that he discovered is due, in no small measure, the reassessment of Cook County property that was ordered by the Illinois Tax Commission. To his facts relating to Cook County which had been presented elsewhere there is added in this report material concerning other sections of the State. It is this latter material together with a comparison of it and the Chicago data that will be of chief interest to readers of this journal.

In 1926 Chicago real estate was assessed at 31.3 per cent of its sale value while real estate in seven counties scattered over the State averaged 33.6 per cent. One year later the Chicago average was 34.9 per cent, while that outside of Chicago (ten counties) was 34.1 per cent. In each case however the average tells an insignificant part of the story. The deviations from the averages picture the inequalities that are of real importance to the people of the State. In spite of the chaotic condition of Chicago assessments it was found that the average deviation from uniformity was greater in the sections of Illinois outside of Chicago than in the city itself. It should be remarked that Dr. Simpson would be the first to admit that his sample of sales data, particularly that applying to several of the counties, is rather scanty and so perhaps not as reliable as might be desired. The general conclusions that in the State outside of Chicago half the properties were assessed at more than three times the rate at which the other half were assessed are backed by a sufficient amount of evidence and will not be disputed by anyone familiar with assessments in Illinois or in other States that have similar problems.

A comparison of the assessment of urban and farm property in the seven counties studied in 1926 indicates that the assessment of urban properties averaged 26.6 per cent of their sales values while farm properties averaged 36 per cent. Two explanations are suggested for this striking difference: the relative homogeneity of Illinois farm property as compared with urban property and the fact that rural sales values of land were declining while urban values were appreciating. It should be emphasized however that the inequality between urban and rural property is slight when compared with the inequalities that appear within each class.

An examination of assessments and size of property reveals the fact that in Illinois as in the rest of the country properties of small value are assessed at a higher percentage of their sales value than are properties of high value. Dr. Simpson implies that this condition of regressive taxation is rather worse in Illinois than in the other States. It is hoped that he is not too optimistic in this. The condition itself is almost universal and the reviewer fears that Illinois does not present a worse picture than a similar investigation would paint for many other States.

The general conclusions which relate to the plight of the small farmer in Illinois deserve quotation:

"Under these conditions, the owner of a small farm property finds himself in a peculiarly unhappy position. In consequence of war-time inflation and post-war deflation, along with other general factors over which he has no control, he finds his property effectually "classified" for purposes of taxation, without the formality of a constitutional amendment. In consequence either of the

incompetence or the deliberate discrimination in assessment, he finds himself subjected to a graduated tax, in which the rates are graduated inversely with the value of his holdings. And when he finds that, as taxpayer whose property consists chiefly of land, he is paying on an average assessment of 49 per cent (1927), while the owner of improved urban property valued at \$20,000 or over is paying on the basis of 25 per cent, he will realize that he is being subjected to something resembling a single-tax on land. In short we have here a combination of undesirable features of classification graduation, and single-tax in a form that is worse probably than any system that could conceivably be established under any of these schemes of taxation alone."

Space does not permit further analysis of the many important points raised by this report. Mention must however be made of the graphic chapters relating to results not susceptible of statistical measurement and to the causes of inequalities. The illustrations of the report ranging from an excellent series of charts to cartoons from the Chicago papers do much to hammer home the ideas presented.

The remedies suggested for Illinois, while following conventional lines, are particularly suggestive in the points that they emphasize. The most urgent need, Dr. Simpson feels, is tax equalization rather than tax reduction and the method of securing it is a revamping of the assessment system. A State tax commission that functions as a scientific body, centralized responsibility for assessments, county assessors, publicity, and a realistic statutory treatment of personality are parts of a changed tax structure that he would construct. He would add, when feasible, a moderate income tax to relieve owners of real estate and other tangible property of a portion of their tax burden.

Whitney Coombs.

St. Lawrence University.

Cooperation in Agriculture, by H. Clyde Filley. New York: John Wiley & Sons, Inc. 1929. xix, 468 p. \$4.00.

In this preface Professor Filley states: "This book is the development of a set of lessons which were prepared for student use at the University of Nebraska. Some of the chapters have been used in essentially the same form for many years. . . . The major portion of the book consists of stories of the organization and operation of cooperative associations for marketing various products in which Americans are interested. . . . The cooperative marketing of grain was selected for use as a concrete type study of cooperation for the following reasons: 1. It has been successful for many years. 2. It is perhaps the most important cooperative movement in America. 3. Nearly all students at the Nebraska College of Agriculture, for whom the lessons were originally prepared, are interested in grain marketing and nearly all live in a community where there is a cooperative elevator. 4. More potential readers of a book upon cooperation are interested in the cooperative marketing of grain than in that of any other one product. 5. The author knows more about the marketing of grain than about the marketing of any other product. 6. The early history of cooperative grain marketing is so dramatic a story that it captures the interest of every student. It appeals to students' sympathies and to their imagina-

tion. . . . "Cooperation in Agriculture" is not an encyclopedia of cooperation. It attempts merely to present the facts which the author believes are of most vital interest to Americans. . . ."

Coverage of agricultural cooperation in America in one book is a large order—too large for treatment satisfactory except as an introductory survey and point of departure. Within these limitations the book is good. Commodity and functional enterprises are presented in the usual major divisions of the field and principles are laid down. The concrete examples are sufficient in number and scope for the purpose; the interpretations are interesting. At many a point readers will not agree with the author, but if complete agreement were possible the problems of cooperatives would have been solved long ago—most of them have been faced by one or another association. The language of the author is vigorous though somewhat lacking in precision.

The feature of the book most attractive to the reviewer is the attention directed to the enterprises that failed and the reasons for failure. No one seems to know how many of these failures there have been, and authentic information about them is hard to get. Cooperative enterprises can fail dismally, or they may merely expire peacefully. It is refreshing to find an author, sold on the system, who will turn these failures to account in his argument.

Those who can accept the propositions stated in the author's preface may wish to use this book as a text. The reviewer suggests, however, that more teachers will find use for it as collateral reading which will stimulate further examination of more extensive accounts of the enterprises described.

S. W. Mendum

Bureau of Agricultural Economics

BOOKS RECEIVED

- Duddy, Edward E. *Agriculture in the Chicago region*. Chicago: Univ. of Chicago Press. 1929. 158 p. \$4.00.
- Beeker, M. N. *Marketing purebred livestock*. New York: Macmillan. 1929. xiv, 393 p. \$3.75.
- Davis, Joseph S. *The farm export debenture plan*. Stanford University: Food Research Institute. 1929. vii, 274 p. \$3.00. [Miscellaneous publication of the Food Research Institute No. 5]
- Hedden, W. P. *How great cities are fed*. Boston: D. C. Heath. 1929. 302 p.
- Empire Marketing Board. *Empire Marketing Board, May 1928 to May 1929*. Report No. 19. London: H. M. Stationery Office. 54 p. 1/0. 1929.
- Mysore Agricultural and Experimental Union. *The Journal*, vol. x, nos. 1 and 2. Mysore, Bangalore: Bangalore Press. [Report of the Royal Commission on Agriculture in India.] 1929. 122 p.
- Dubrowski, S. *Die Bauerbewegung in der Russischen revolution 1917*. Berlin: Paul Parey [International Agrarian Institute, Moscow.] 1929. 206 p. [In German] Rm 6.
- Pitt, D. T., Compiler. *Statistical Handbook of New Jersey Agriculture*. Circular 166 of the N.J. State Department of Agriculture, Trenton. 1930. 348 p.

NEWS NOTES

CORRECTION

The name of Dr. George F. Warren, Chairman, should be added to the list of members of the Commission which made the survey in Germany in the summer of 1928, report of which was printed on page 657 of the October, 1929, JOURNAL.

THE AGRICULTURAL ECONOMICS SOCIETY

The Agricultural Economics Society was founded in 1926 for the purpose of promoting the study and teaching of history, statistics, economics, and sociology in relation to the agricultural industry and agricultural communities. These objects are pursued by holding meetings, the proceedings of which, including both papers and discussions, are published by the Society; by the collection and circulation of other papers of interest to members, or by the issue of bibliographies which advise members of current literature within the purview of the Society's objects.

The Society consists of Honorary members and Ordinary members. Honorary membership is accorded by a vote of a General Meeting, following the nomination of the Executive Committee. Ordinary membership is by approval of the Executive Committee and is subject to the payment of an annual subscription of one guinea (21/—) renewable annually in May.

Usually the Society holds two meetings during the year, a Summer Conference at one of the older Universities, and a Winter Conference in London at the time of the Fat Stock Show at Smithfield.

The membership of the Society includes nearly all the advisory and research workers in Agricultural Economics in Great Britain and Ireland, a number of the members of the Agricultural and Economics Departments of the British Universities and Agricultural Colleges, officers of Government Departments of Agriculture and Statistics, and others interested in the practical administration of agricultural or rural affairs in Great Britain and abroad. At the present time its membership is approximately 156. Recently the Society has been happy to welcome into its membership a number of workers in the Agricultural Economics field in the United States and Canada, and the opportunity kindly offered by the American Farm Economics Association of extending a wider invitation to members of that Association to join our British Society is heartily welcomed and accepted.

Up to the present two Reports of Proceedings and some additional separate papers have been published, and a considerable volume of other literature has been circulated. The earlier issues of the Society, as far as they are at present available, will be sent to members who join during the current year. It will be a pleasure to receive the names of any members of the American Farm Economics Association who may wish to become associated with the Society. Names and remittances should be sent, either direct to Dr. A. G. Ruston, Honorary Treasurer, at the Agricultural Economics Department, The University of Leeds,

England, or they may be sent through the Secretary-Treasurer of the American Farm Economic Association, Dr. W. I. Myers, Cornell University, Ithaca, New York.

THE WORLD CENSUS OF AGRICULTURE IN 1930

The first world census of agriculture, undertaken under the auspices of the International Institute of Agriculture at Rome, will include for the Northern Hemisphere the area and production of crops harvested in 1929 and the numbers of different kinds of livestock and other agricultural data at the close of the year. Two countries have already led the world in completing their censuses, namely, Switzerland, and Dahomey, West Africa. Of the remaining countries, 70, including the principal agricultural countries of the world, are actively preparing to take their censuses early in 1930, and about 100 other countries have promised to participate in the census but have not yet reported what action has been taken to insure the taking of the census. In all, promises of cooperation by responsible government officials have been obtained for countries and their dependencies comprising more than 97 per cent of the total land surface, 98 per cent of total population, and 99 per cent of total agricultural and livestock production of the world.

The future success of the world agricultural census now depends upon the various governments which have promised cooperation in this great undertaking. The results of the first world-wide census of agriculture will begin to be available in the winter of 1930-31. It is planned by the International Institute of Agriculture and the League of Nations that the world agricultural census shall be repeated every ten years.

Leon M. Estabrook.

Bureau of Agricultural Economics.

INTERNATIONAL CONFERENCE OF AGRICULTURAL ECONOMISTS IN ENGLAND

About 40 economists from 12 countries attended an international conference in Agricultural Economics held at Dartington Hall, Totnes, in Devonshire, England, from August 26 to September 6, 1929. Plans for this conference were initiated by C. S. Orwin of Oxford University, L. K. Elmhirst and J. R. Currie of Dartington Hall, and C. E. Ladd of Cornell University. Members of the conference were the guests of Mr. and Mrs. Elmhirst for the two-week period. Meetings were held each forenoon and evening at which papers were presented on various phases of research in agricultural economics and discussed at some length.

Papers presented at the conference were as follows: Tenure of land in Great Britain, by C. S. Orwin of Oxford, D. A. E. Harkness, of the Ministry of Agriculture, Ireland, and J. P. Maxton of Oxford; Methods used in agricultural economic research, by G. F. Warren of Cornell; A general survey of farming systems in England and Wales, by A. Bridges of Oxford; A summary of cost account results in the United States, by G. A. Pond, of Minnesota, and H. C. M. Case, of Illinois; A summary of cost account results in England, by A. G. Ruston, of Leeds University; Farm Management research work in Canada, by W. Allen,

of Saskatchewan, and J. Coke, of Guelph, Canada; Changes in size and number of farm holdings in England during the past 100 years with particular attention to small holdings and the problems of small holders, by E. Thomas, of Reading University; Review of cost accounting methods in England, by A. Bridges, of Oxford; The economic situation in European Agriculture, by R. R. Enfield, Ministry of Agriculture, London; Agricultural problems, by H. C. Taylor, of the Vermont County Life Commission; Population problems, by A. W. Ashby, University College of Wales, Aberystwyth, and O. E. Baker, of the United States Department of Agriculture, Washington; Cooperative marketing in Finland, by K. T. Jutila, of University of Helsinki; Cooperative marketing in Norway, by P. Borgedal, College of Agriculture, Norway; Cooperative Marketing in Denmark, by O. H. Larsen, Royal Agricultural College, Denmark; Cooperative marketing in Germany, by K. Zorner, Berlin Agricultural High School, Germany; Economic and political history of the clash between agriculture and industry during the past 100 years, by J. Orr, Manchester University; Research in milk marketing in England as illustrated by a survey in Derbyshire, by F. J. Prewett, Oxford University; Marketing of dairy products, results of studies and methods used, by L. Spencer, Cornell University; and, Marketing of fruits and vegetables, results of studies and methods used, by M. P. Rasmussen, Cornell University. F. A. Pearson of Cornell University and H. A. Wallace of Des Moines, Iowa, held frequent conferences with those who were interested in statistical methods used in agricultural economics research in the United States.

The conference was remarkable for the enthusiasm with which all members partook in the proceedings. The opinion was frequently expressed that the conference had been very much worth while and should be made a permanent institution. At the conclusion of this conference, it was voted that plans be made to hold a second conference during August, 1930, at Cornell University, Ithaca, New York. It is planned to mimeograph the proceedings of the conference held in England and a limited number of copies will be available for distribution. Those interested in obtaining copies of the proceedings should apply to C. L. Ladd, New York State College of Agriculture, Ithaca, New York.

M. P. Rasmussen.

Cornell University

A compilation of research work in progress in the Bureau of Agricultural Economics, as of June 30, 1929, made under the direction of H. R. Tolley, Assistant Chief in charge of research, listed 287 projects being carried by 14 Divisions of the Bureau. A list of similar work in progress in the Department of Agriculture in 1919 covered only 54 research projects.

The Federal Reserve Board has recently turned over to the Bureau of Agricultural Economics some of the statistical work relating to certain movements of grain, flour, and tobacco to and from principal markets. These figures are gathered from chambers of commerce and other local agencies, and from State departments of agriculture. The service was inaugurated in 1919 when similar statistics were not available from other sources.

Mr. W. W. Armentrout has been promoted to the rank of Assistant Professor of Farm Economics at West Virginia University.

Mr. Aura M. Carkuff has been appointed Assistant Agricultural Economist in the Division of Crop and Livestock Estimates and is located at Topeka, Kansas.

Mr. Marion Clawson, recently engaged in studies of cost of production and farm organization at the Nevada State Agricultural Experiment Station, is now with the Bureau of Agricultural Economics, at Washington, D.C.

Dr. A. J. Dadisman, Professor of Farm Economics at West Virginia University has been made Director of the Summer School of the University.

Dr. Joseph S. Davis is now in Washington as Chief Economist of the Federal Farm Board.

Mr. Leon M. Estabrook has completed his part of the work on the World Census of Agriculture of 1930, which is being undertaken by the International Institute of Agriculture at Rome, and has returned to Washington. During his five years of travel on the census work, Mr. Estabrook visited practically all the countries of the world.

Dr. Mordecai Ezekiel expects to join the staff of the Federal Farm Board about February 1.

Mr. Paul Finkhauser has been appointed Assistant Farm Management Extension Specialist in the Department of Rural Economics at Ohio State University.

Mr. Samuel J. Gilbert has been appointed Assistant Agricultural Economist in the Division of Crop and Livestock Estimates, and is located at Madison, Wis.

Mr. F. F. Hill, formerly of the Federal Land Bank of Springfield, Mass. has recently joined the Department of Agricultural Economics and Farm Management, Cornell University. He plans to make a study of some phases of rural government.

Mr. I. S. Haddinott has been appointed Extension Specialist in dairy marketing in the Department of Rural Economics at Ohio State University.

Mr. Harold I. Hollister, formerly Assistant Farm Management Demonstrator at the Kansas State Agricultural College, is now an Assistant Marketing Specialist serving the Grain Futures Administration and the Warehouse Division of the Bureau of Agricultural Economics at Kansas City, Missouri.

Mr. Irving Holmes, Junior Crop and Livestock Estimator has been transferred from Washington, D.C. to Lansing, Michigan.

Professor M. L. Holmes of the Department of Agricultural Economics and Farm Management, Cornell University, has resigned to take effect February 1, to take a position with the G.L.F. Exchange.

Mr. Joseph G. Knapp, formerly of the Institute of Economics, Washington, D.C., has accepted a position as Head of the Marketing Division of the Department of Agricultural Economics, North Carolina State College of Agriculture and Engineering.

Mr. George Knutson, Assistant Crop and Live stock Estimator, Bureau of Agricultural Economics, is now located at Grand Forks, North Dakota.

Dr. E. G. Misner of the Department of Agricultural Economics and Farm Management, Cornell University, went to University of Saskatchewan, Saskatoon, Canada, January 1, 1930 to assist with the summarizing and writing up of the results of the farm management survey taken last summer.

Mr. Frederick A. Motz, formerly Extension Horticulturist and Associate Professor of Horticulture at Virginia Polytechnic Institute, has been appointed Agricultural Commissioner, with headquarters in London, England. Mr. Motz will study the marketing of fruits and vegetables and will keep the American fruit interests advised of production and marketing conditions in England and on the Continent through the news service of the Bureau of Agricultural Economics.

Mr. Niels I. Nielson, for more than seven years a crop and livestock estimator in California has been selected to take charge of an office of the Bureau of Agricultural Economics soon to be opened in Marseilles, France.

Mr. Julius H. Peters, recently with the Agricultural Economics Section of the Iowa State Agricultural Experiment Station, has joined the field office of the Bureau of Agricultural Economics at Des Moines, Iowa, as Assistant Agricultural Economist.

Mr. H. R. Tolley, now Assistant Chief, Bureau of Agricultural Economics, plans on April 1 to go to Berkeley, California to accept a position as Professor of Agricultural Economics and Assistant Director of the Giannini Foundation of Agricultural Economics.

Mr. Henry L. Rasor, Columbia, South Carolina, has been promoted to the rank of Junior Crop and Livestock Estimator in the crop reporting service of the Bureau of Agricultural Economics.

Mr. Ralph H. Rogers, formerly in charge of Farm Management work at South Dakota State College, was appointed in charge of the work in farm organization and management in the Department of Agricultural Economics, North Carolina State College of Agriculture and Engineering.

Mr. Harry H. Schutz, for many years Agricultural Statistician in Texas has resigned in order to take a position with Anderson, Clayton & Co., cotton merchants. Mr. Schutz will have his headquarters in Los Angeles, California.

Mr. G. P. Scoville, on leave of absence from Cornell University, is conducting an economic study of the grape industry in several States which are cooperating in the work with the Bureau of Agricultural Economics.

Mr. Raymond Smith has been appointed Assistant Professor of Rural Economics in the Department of Rural Economics at Ohio University. He will be engaged in research and extension work.

Dr. Walter Bauer, formerly of the International Institute of Agriculture, Rome, has joined the staff of the Giannini Foundation of Agricultural Economics at Berkeley, California.

Mr. Benjamin R. Stauber recently a part-time instructor in the School of Business Administration, University of Minnesota, has been appointed an Assistant Agricultural Economist in the Division of Land Economics, and has been assigned to assist with the land valuation studies of the Bureau of Agricultural Economics.

Mr. R. O. Stelzer has been appointed Assistant in Farm Economics, West Virginia University.

Mr. Lloyd S. Tenny has been made Business Manager of the Chicago Mercantile Exchange, Chicago, Illinois.

Mr. Norman J. Wall has been appointed Senior Research Specialist in Farm Mortgage Finance, Bureau of Agricultural Economics. Mr. Wall spent last year studying at the London School of Economics and in independent research.

TWENTIETH ANNUAL MEETING

The twentieth annual meeting of the American Farm Economic Association was held in Washington, D.C., at the Willard Hotel, December 27 to 30, 1929.

The first session convened at 10:00 A.M. on December 27. At this session, the following committees were appointed by President H. E. Erdman:

Nominations: H. C. Taylor, G. F. Warren, and J. I. Falconer.

Resolutions: H. C. M. Case, W. E. Grimes, and William Allen.

Audit: O. M. Johnson, and P. L. Miller.

The first business meeting convened at 9:30 A.M. December 28, 1929.

The minutes of the previous meeting were approved as printed in the JOURNAL OF FARM ECONOMICS, January, 1929, page 184.

The reports of the Secretary-Treasurer, and of the Editor were read and accepted.

In accordance with the recommendation of the Secretary-Treasurer, a motion was introduced by J. I. Falconer to amend the by-laws by discontinuing associate membership at the reduced rate on and after January 1, 1930. On motion of H. R. Tolley, this matter was laid on the table until the second business session.

The report of the Corn-borer Committee was read and approved.

The business meeting was adjourned at 10:00 A.M.

The second business meeting of the Association was convened at 9:30 A.M., December 30.

The report of the auditing committee was read and approved. The report of the committee on nominations was read. In accordance with a motion, moved and seconded, and unanimously carried, the Secretary-Treasurer was instructed to cast one ballot for the election of each of the following officers for the year 1930:

President, H. C. M. Case, of Illinois.

Vice-President, L. G. Foster, of Ohio.

Secretary-Treasurer, W. I. Myers, of New York.

The motion to amend the by-laws by elimination of associate membership at the reduced rate on and after January 1, 1930 was taken from the table and unanimously carried.

The report of the committee on resolutions was read and the following resolutions were passed:

Be it resolved: That the American Farm Economic Association express to Mr. Alexander Legge, Chairman of the Federal Farm Board, its appreciation for his participation in the program of the Association.

Be it resolved: That the American Farm Economic Association express to the Federal Farm Board its willingness to cooperate with the Board in every possible way in accomplishing the objectives of the Act creating the Board, and,

That we urge the Board to acquaint the various Federal and State agencies with the research needed in carrying out the plans and policies of the Board so that these research agencies may develop their programs of work in ways which will be of greatest assistance to the Board, and,

That in developing and extending its program the Board cooperate with existing Federal and State research and extension agencies, and,

That the Secretary transmit to the chairman of the Federal Farm Board a copy of this resolution.

Be it resolved: That the Secretary, on behalf of the Association, be instructed to thank the management of the various hotels contributing to the success of the meetings of the Association.

Be it resolved: That the Secretary, on behalf of the Association, be instructed to thank the joint committee on arrangements for its efforts in making the meetings a success.

Be it resolved: That to better meet the needs of research and extension work, the American Farm Economic Association, urges the Census Bureau to tabulate the 1930 Federal Census of Agriculture by townships or corresponding civil divisions.

The program was carried out as planned.

Although the seating capacity of the rooms assigned was taxed in some instances, the hotel arrangements were in general very satisfactory.

Attendance:

December 27, morning	250
joint luncheon with Rural Sociology...	140
afternoon, round table on Farm Man-	
agement	125
afternoon, round table on Marketing..	100
evening	40
December 28, morning	250
afternoon, joint meeting with American	
Statistical and American Economic	
Associations	300
evening	150
December 30, morning	150
luncheon	150
afternoon, joint meeting with American	
Economic Association	300

At a meeting of the executive committee, the printing budget for the year 1930 was set at \$3,000.

The resignations of the Editor, H. R. Tolley and Assistant Editor, S. W. Mendum were accepted with regret. H. E. Erdman of California was elected as Editor for the year 1930.

It was the unanimous opinion of the executive committee that the American Farm Economic Association is deeply indebted to the retiring Editor H. R. Tolley and to the Assistant Editor, S. W. Mendum. Through their efforts the Journal has been enlarged and improved until it stands in a foremost position among the Journals of the Scientific Associations.

An appropriation of \$10.00 to the International Country Life Association was approved.

The reports of the Secretary-Treasurer, of the Editor, and of the Corn-borer Committee are appended.

W. I. MYERS, *Secretary*

Report of the Secretary-Treasurer
Financial statement, year ended December 20, 1929

RECEIPTS

Receipts from dues:

Active members	\$ 3,977.19	
Associate members	292.26	
		<hr/>
Total dues		\$ 4,269.45
Back numbers of the JOURNAL		325.05
Interest on bank balances		120.83
		<hr/>
Total receipts		\$ 4,715.33

EXPENSES

JOURNAL OF FARM ECONOMICS:

Volume XI, 1929	\$ 2,683.39	
Reprints for authors	322.84	
Handbook	219.23	
		<hr/>
Total, Volume XI		\$ 3,225.46
Back numbers of JOURNAL purchased		89.75
Refunds on overpayments		21.50
Postage and envelopes		47.75
Stationery and office supplies		27.20
Joint expenses—1928 annual meeting		85.11
Expenses of Secretary-Treasurer and Asst. Editor to Chicago meeting		145.17
Telegrams		8.26
		<hr/>
Total expenses		\$ 3,650.20
Amount of receipts above expenses for year		\$ 1,065.13
Balance, December 20, 1928		\$ 2,398.45
Balance, December 20, 1929		\$ 3,463.58
Invested as follows:		
Checking account	\$ 302.78	
Savings account	160.80	
Income shares, Ithaca Savings and Loan Association (at 5 per cent)	3,000.00	
		<hr/>
		\$ 3,463.58

There are no bills outstanding against the Association and no financial obligations except for expenses in connection with the present annual meeting. As a result of the year's operations, the Association shows an increase in cash of \$1,065.13. In preparing this balance sheet, no allowance was made for pre-paid or unpaid membership dues, or for the inventory of recent issues of the Journal.

Receipts for 1929 show an increase of \$471.89 over the preceding year due almost entirely to an increase in active membership. Expenses show an increase of \$301.66 over the previous year, caused by heavier outlays for printing and the expenses of the Secretary-Treasurer and Assistant Editor at the Chicago meeting.

The size of the Journal was increased from 602 pages in 1928 to 702 pages in 1929, and in addition there was a 40-page Handbook of members. From 1150 to 1200 copies of each issue of the Journal have been printed in order to maintain a generous reserve to meet the requests for back issues from new members.

Membership

The steady, consistent growth in membership that has taken place during recent years continued during 1929. Comparative membership figures at the beginning and at the end of the past year are as follows:

	December 20		Net
	1928	1929	increase
Active members	726	812	86
Associate members	160	162	2
Total members	886	974	88

There are 27 delinquent members including 22 active and 5 associate members.

Further details on the classification of the membership as of December 20, 1929 are as follows:

	Active	Associate	Total
Individuals	537	162	699
Libraries in the United States.....	125		125
Corporations in the United States	52		52
Foreign libraries	86		86
Foreign corporations	12		12
Total	812	162	974

The ten leading States in total membership are:

District of Columbia	107
Illinois	81
New York	73
California	35
Iowa	31
Ohio	30
Minnesota	28
Wisconsin	28
Texas	22
Pennsylvania	20
New Jersey	20

The number of foreign members of the Association shows a steady and

gratifying increase. The Journal now goes regularly to members in 30 countries outside of the United States. The leading countries in membership are:

Canada	25
British Isles	23
Japan	23
Russia (U.S.S.R.)	21
Germany	17

I recommend the abolition of the present associate membership at the reduced rate of \$2 per year. The cost of printing the Journal has increased with the increasing size and has averaged \$2.75 per member during the past year. This is for printing only and does not include any share of postage or other expenses of the association. Delinquents are relatively more numerous among the associate members than among the active members. It is very difficult to administer the present rule fairly. Active members usually notify your Secretary promptly if they become eligible as associate members, but associate members are not so prompt in notifying us when they are no longer eligible to that class of membership.

Graduate students who are unable to afford the full membership fee would have access to the Journal at the institutions where they are studying. The annual meetings are always open to interested persons regardless of membership in the association.

The most important need of the association is a larger active membership. The most effective means of achieving this aim are thru improving the Journal and thru the efforts of the State representatives. On behalf of the association, I wish to thank the State representatives for their excellent work during the past year.

The work of the Secretary-Treasurer's office is increasing constantly. It is highly important that the Office of Secretary-Treasurer should be made semi-permanent at the earliest possible moment. Our large and increasing foreign membership makes this step especially necessary. However, it is impossible to effect this change until the association is in a position to pay for the clerical work involved in carrying on its business affairs.

In spite of efforts to obtain early issues of the Journal, the supply of many issues has become exhausted, and it is impossible to furnish complete files to the many libraries desiring them. During the past year, this office has been paying \$1 per copy for missing early issues and reselling them to Libraries at the same price. Members who are willing to part with their sets of volumes 1 to 8, at these prices are asked to communicate with the Secretary-Treasurer.

Respectfully submitted,

W. I. MEYERS, *Secretary-Treasurer*

Report of the Editor of the JOURNAL

Thanks to ample financial support and interest among the membership, the editors have been able to reflect the increasing influence of the Association through the most impressive volume of the series of the JOURNAL OF FARM ECONOMICS. Volume XI, that for the year 1929, contained more articles by more contributors than any previous volume, and went to a larger mailing list.

Papers read at the 19th annual meeting at Chicago were printed virtually as read and took 62 per cent of the space of Volume XI. Publication of papers read at the meeting in December was not completed until the October number was issued. Holding of papers read at the annual meetings later than the April issue is unfortunate, but hardly to be avoided if all papers are printed as delivered and if the several issues are to be of approximately the same size. The editor feels that the time is approaching when the Association may publish a volume of proceedings and use the space allotted to the JOURNAL proper for meritorious papers and other editorial features.

The "Notes" section begun in the April number under Dr. Black's immediate supervision promises to develop into an interesting and valuable feature of the JOURNAL. Cooperation of the membership is necessary if this section is to attain the place planned for it.

A section of "news notes" was resumed in the April number and 86 items, mostly of the personal-mention type, were used. The editor is not proud of the showing this year and admits inadequate cultivation of a field which should prove fertile. On the other hand, the soil of this field is the membership of the Association, and the yield is not wholly in the control of the editor.

In view of the coverage assumed by Social Science Abstracts, the editor feels that the sections of book notes and lists of publications may now be dispensed with. These items took 49 pages of the volume just completed.

The book reviews should be continued and the number of reviews increased. In the past, these reviews have largely been confined to books offered by publishers or by authors for the purpose, and have been done at the special request of the editor. Under this arrangement, some worthy books doubtless have been overlooked. The editor bespeaks the cooperation of the membership in calling attention to new books in our field.

The list of members published in April as a supplement to the JOURNAL was entirely the work of the Secretary. It was the first such list issued since 1922. Additional names were printed in the July and the October issues, so that now we have a fairly complete current list of members and subscribers.

The editor directs attention again to the lists of candidates for advanced degrees, which this year included a survey of the principal Canadian and European institutions. This list was worked up by Dr. F. A. Pearson, and represents a great deal of painstaking effort.

Space Distribution of the 1929 Journal

	<i>Items</i>	<i>Pages</i>
Papers read at the Chicago meeting	29	396
Discussions thereof	21	44
Other major articles	10	85
Notes	16	35
Lists of candidates for advanced degrees		28
Books reviewed	15	34
Publications listed	472	52
Reports, news notes, notices, index, etc.		30
Total		704

The index shows 104 subject entries, 76 author-contributors, and 15 book reviews.

The cost of the JOURNAL of 1929 was also larger than ever before. More pages were used and larger editions were ordered to supply the larger subscription list and to provide a reserve supply, lack of which with respect to some previous issues has been keenly felt. The unit rates for composition and press work were not increased. The publishing house has cooperated in gratifying manner at all times.

Volume XI has cost the Association about \$3,000 including the cost of reprints furnished authors of the major articles at the expense of the Association. The cost per set of four numbers was about \$3.50 per set originally mailed out, or about \$2.75 per set printed. The cost per page at \$4.40 is less than it has been in some other years, though slightly more than in 1928 because of the larger editions printed. In addition, the membership list cost \$219 for printing and original mailing.

H. R. TOLLEY, *Editor*

Report of the Corn Borer Committee

December 27, 1929

While the corn borer has not yet caused commercial damage over any large portion of the Corn-belt, and has advanced less rapidly than many at first feared, all sections realize that it is steadily but surely approaching. Hope of exterminating the corn borer has been abandoned and work on this problem must proceed thru assured necessity of adjustments such as will enable us to produce corn under borer conditions probably necessitating stringent measures of control.

During the past few years, much information has been made available regarding: (1) costs of corn borer clean-up, (2) desirable substitute crops, (3) uses of the husker-shredder in combating the corn borer, (4) cost of production of different farm crops, (5) farm account and farm management studies, (6) desirable farm organization programs under corn-borer conditions, (7) and other related subjects. Much economic research and extension work in the Corn-belt at the present time is being designed or adjusted to give a basis for answering problems presented by the corn borer as it approaches.

The committee recommends that all members of the Association do everything in their power to promote research work directed toward problems arising from general corn-borer infestation and that careful attention be given to the effect of such infestation upon farm incomes, farm expenses, changes in types of farming and changes in methods.

Two members of the Corn-borer Committee of the Farm Economics Association represented the Association at the meeting of the Joint Committee of Entomologists, Agronomists, Animal Husbandmen, Agricultural Engineers, and Agricultural Economists at the fifth annual inspection trip and annual conference of the European Corn-borer Organization during September, 1929. The report of this joint committee which includes the status of corn-borer organiza-

tion work, as well as general recommendations for the future was prepared for the approval or rejection of the five societies represented.

The committee hereby submits the report of the joint committee appointed by American Association of Economic Entomologists, American Society of Agronomy, American Society of Agricultural Engineers, American Farm Economic Association, and American Society of Animal Production.

Report of the Joint Committee on European Corn Borer

Toledo, Ohio, September 27, 1929

The European corn borer has continued its natural spread since its discovery in America in 1917. Its average rate of advance to the South and West has been from 25 to 30 miles per year. In 1929 it occupied 10,000 to 12,000 square miles of new territory in the United States. It now occurs throughout the southern portion of Quebec and Ontario, as well as locally in New Brunswick and Nova Scotia in Canada, the southern two-thirds of New England, the northern extremity of New Jersey, all of New York, three fourths of Pennsylvania and Ohio, the Panhandle of West Virginia, nearly all of the agricultural portion of Michigan and the northeastern fourth of Indiana. It has now reached the threshold of the main Corn Belt.

The corn borer is only thinly distributed over the newly infested territory and causes no apparent injury. It increases in numbers rather slowly at first and, judging from past experience, will not cause evident injury in the first 2 to 4 years. This provides a period during which the entire community should obtain and apply the latest recommended control measures. In most of the older infested areas the borer has increased greatly in numbers. Where this insect has been established for several years, commercial damage to corn now occurs unless natural factors have checked the borer temporarily or adequate control measures have been applied. If this is true in the eastern edge of the Corn Belt, where most of the corn is cut and much of it put in the silo, thus simplifying an adequate clean-up, how much more will it be true in the main Corn Belt where most of the stalks are left in the field?

It, therefore, is still the opinion of the Joint Committee that, unless the corn borer is controlled, it will become one of the most destructive crop pests ever introduced into America. The situation, presenting as it does, the possibility of enormous agricultural losses, calls for the continued cooperation of the farmer, the scientist, the educator, and all State and Federal administrative officials.

The cooperating committee of entomologists, agronomists, agricultural engineers, agricultural economists, and animal husbandmen, most heartily endorses all endeavors to control the corn borer, and commends the efforts of all farmers practicing control measures and all persons engaged in the research, regulatory, and educational activities.

The committee recognizes the necessity for the continued development of the research, educational, and quarantine programs of the State and Federal Governments and earnestly recommends the appropriation of the funds necessary to maintain these activities, and expand them when necessary.

After careful and complete investigation of the corn-borer regulatory, re-

search, and educational activities, the committee suggests and recommends:

1. That since the quarantine efforts have been successful in preventing long-distance spread by artificial means, and since the only known spread of any importance in the United States has been by the natural flight of the corn-borer moths or by water drift of infested material, the quarantine activities of the Federal Governments of the United States and Canada should be supported and encouraged by the States and Provincial Agricultural Colleges and Experiment Stations, the State Departments of Agriculture, and all other agencies interested in the welfare of American agriculture.

2. That because the clean-up in certain of the infested areas has not been complete and the borer population is increasing, quarantine action is much more imperative.

3. That scouting should be continued in the areas contiguous to known infested areas and extended to the larger corn-producing States where areas seem particularly exposed to infestation. Ample funds should be available for a thorough clean-up of isolated infestation in such areas.

4. That two primary methods of control of the corn borer are recognized, namely, (a) the utilization or destruction of all host plant remnants each year, and (b) the somewhat later planting of corn. To facilitate the first of these methods labor saving tools and farm machinery should be devised or improved as rapidly as possible.

5. That gratifying progress in European Corn-Borer research has been made during the past year. Certain phases have already yielded results from which conclusions of both practical and technical value have been drawn. On the other hand, the committee wishes to emphasize the necessity for continued effort in each of the major lines of entomology, agronomy, agricultural engineering, agricultural economics and animal husbandry. While certain lines of work have served their purpose and should be discontinued along with those that have been found unfruitful, there are still many problems requiring continued study as well as others yet unattacked and it is urged that future emphasis be given these. In addition, the committee suggests that all major phases be expanded so far as practicable, into corn-belt States not yet infested with the borer.

Respectfully submitted,

Committees

American Association of Economic Entomologists

G. A. Dean
L. Caesar

D. J. Caffrey
J. J. Davis

C. J. Drake

American Society of Agronomy

L. E. Call
W. L. Burlison

J. F. Cox
R. M. Salter

F. D. Richey

American Society of Agricultural Engineers

C. O. Reed	A. L. Young
S. H. McCrory	R. B. Gray
	R. D. Bardon

American Farm Economic Association

C. R. Arnold	H. M. C. Case
O. G. Lloyd	A. G. Black
	C. L. Holmes

American Society of Animal Production

E. W. Sheets	Paul Gerlaugh
F. G. King	G. A. Brown
	F. B. Morrison
	C. R. ARNOLD, <i>Chairman</i>

THE AMERICAN FARM ECONOMIC ASSOCIATION

CONSTITUTION

ARTICLE I

Name.—The name of the Association shall be The American Farm (Management) Economic Association.

ARTICLE II

Object.—The object of this Association shall be to promote the investigation and teaching of farm management and other economic questions pertaining to agriculture.

ARTICLE III

Membership.—The membership shall consist of persons interested in Farm Management and Farm Economics.

ARTICLE IV

Organization.—The officers shall be a President, Vice-President, and a Secretary-Treasurer, who shall be elected for one year, and who shall serve until their successors shall qualify.

The Executive Committee shall consist of the active officers, and two latest past presidents, and shall have the power of appointing committees, selecting time and places of meeting, and of bringing to the attention of the members any matter which in their judgment should be considered by the Association.

There shall be three standing committees appointed annually by the Executive Committee. One of these committees shall consider the lines of investigation best adapted to the needs of the work of farm (management) economics at the present time and shall suggest to various investigators plans of correlation and cooperation in the work. It shall be the duty of this committee to collect, as far as possible from investigators, the lines of work to be carried out each year. The second committee shall investigate the methods of lecture and laboratory work in farm (management) economics and make suggestions to members of the Association and to Colleges intending to organize courses in farm (management) economics. It shall be the duty of the third committee to report on extension work in farm (management) economics.

ARTICLE V

Section 1. Dues and Subscriptions.—The rate for members of the Association shall be five dollars per year, payable in advance. This amount is divided as follows: Annual dues fifty cents, and annual subscription to the JOURNAL OF FARM ECONOMICS, four dollars and fifty cents.

Section 2. Life membership in the Association may be secured by the payment of seventy-five dollars (\$75). Funds thus obtained shall be invested and only the income spent.

ARTICLE VI

Meetings.—There shall be held an annual meeting of the Association, the arrangements and program to be made by the Executive Committee. Notice of such meeting shall be mailed to each member at least four weeks in advance.

ARTICLE VII

Amendments.—This constitution may be amended by a two-thirds vote of the members present at any meeting of the Association.